



## ASSESSMENT OF INTRA OPERATIVE AND POSTOPERATIVE COMPLICATIONS IN CATARACT SURGERIES (SMALL INCISION CATARACT SURGERY) PERFORMED BY TRAINEES IN A MEDICAL COLLEGE.

### Ophthalmology

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### ABSTRACT

**INTRODUCTION:** Cataract has remained the preventable cause of blindness worldwide and cataract surgery especially sics is the most common procedure performed in ophthalmology worldwide.

**OBJECTIVE:** To assess intraoperative and postoperative complications at cataract surgeries (Small Incision Cataract Surgery) performed by 2<sup>nd</sup> and 3<sup>rd</sup> year trainees in Alluri Sitarama Raju Academy of Medical Sciences, Eluru.

**MATERIALS AND METHODS:** This is a randomized prospective study with sample size 50 patients undergoing small incision cataract surgery by second and third year postgraduate residents performed in our department of Ophthalmology, Alluri Sitarama Raju Academy of Medical Sciences, Eluru during period of March 2019 to June 2019.

**RESULTS:** Most common intra operative complication that occurred in our study are scleral tunnel (18) followed by cortical wash (15) and capsular flaps while doing can opener technique of anterior capsule removal (15). Most common postoperative complication that occurred in our study was with striate keratopathy (25), followed by AC reaction (18) and corneal edema (16).

**CONCLUSION:** Patients having age related cataract are included in the study group. Here in this study residents facing complications while performing the cataract surgery and complications presented after the surgery were analysed in the form of a questionnaire.

### KEYWORDS

#### INTRODUCTION:

Cataract has remained the leading cause of preventable blindness worldwide in the last two decades. The outcome of cataract surgeries depends in the part of surgeons skills. Need for good surgical outcomes cannot be overemphasized as complications can convert treatable cataract to irreversible blindness.

Manual SICS is widely practiced in India and other Asian countries as it is less expensive than phacoemulsification. The intra operative and post operative complications and final outcomes of the procedures in the hands of an experienced surgeon are comparable.

Cataract surgery is the most common procedure performed in ophthalmology and is one of the basic procedures; ophthalmic trainees learn and it is important to evaluate the complication rate. Since the outcome of cataract surgery depends on a surgeon's skill, monitoring surgical competency, especially that of trainees, is essential to ensure patient safety and standard of care.

Small incision surgery has certain advantages over standard size ab externo incision employed in conventional ECCE such as

1. Better wound stability
2. Reduction of induced astigmatism
3. Greater patient comfort with early visual rehabilitation
4. Less chances of AC collapse during surgery
5. Dreaded complications like expulsive haemorrhage can be avoided
6. Suture and suture related complications can be avoided
7. Minimal postoperative visits.

#### ADVANTAGES OF SICS OVER PHACOEMULSIFICATION:

1. Manual sics donot depend on expensive machinery.
2. Doesnt require heavy financial investment
3. Doesnot require highly trained personnel for maintenance and may be practiced easily in any corner of the world.
4. Besides that, a well trained surgeon equally experienced in both the techniques can operate two to three times patients per hour doing manual sics than phaco.
5. For young ophthalmic surgeons everywhere in the world, manual SICS provides ideal stepping stone to mastering phacoe mulsification.
6. Universal applicability

7. Learning curve

8. Minimal surgical complications

#### CRITERIA FOR IDEAL CASE SELECTION FOR MANUAL SICS

1. CORNEA: healthy good clarity, normal thickness,
2. NORMAL anterior chamber depth
3. Well dilated pupil
4. Intact zonules
5. TYPE OF CATARACT: Immature cortical cataract, nuclear sclerosis grade 2 and 3

#### AIM:

To assess intra operative and postoperative complications in cataract surgeries (Small Incision Cataract Surgery) performed by trainees in a Medical College.

#### MATERIALS AND METHODS:

- **Study type:** Prospective randomized study.
- **Sample size:** 50 patients undergoing SICS going to be performed by 2<sup>nd</sup> and 3<sup>rd</sup> year post graduates
- **Duration of study:** March 2019 to June 2019.
- **Place of study:** Department of Ophthalmology, ASRAM Medical College and Hospital, Eluru.

#### INCLUSION CRITERIA:

- All patients diagnosed with senile cataract and undergoing cataract surgery.
- Willing to give a written consent.
- Patients with no other ocular diseases
- Patients who are not using any topical medication.

#### EXCLUSION CRITERIA:

- Patients with known ocular comorbidity.
- Patients with hypermature cataract.
- Subluxated lens.
- Systemic disorders like any bleeding diathesis, predisposing the patient to hyphaema from sclera tunnel
- Inflammatory conjunctival scarring disorders
- Scleritis or past history of scleritis
- Congenital corneal abnormalities like microcornea
- Low endothelial cell count of cornea

- Peripheral thinning of cornea.

Patients are selected according to the above criteria. Pre operatively complete ocular and systemic evaluation was done. Visual acuity, slit lamp examination and fundus examination using 90D lens done. Ocular investigations, keratometry, syringing, Intraocular pressure , IOL power calculation was done.

#### SURGICAL TECHNIQUE:

SICS was performed under peribulbar anesthesia. Eye is draped. Superior rectus bridle suture was applied. After raising a conjunctival flap, SICS was performed through a 5.5 to 6mm corneoscleral incision. Side port was given followed by can opener technique for anterior capsule removal. Nucleus was prolapsed into the anterior chamber. Nucleus delivery was done using irrigating vectis after injection of viscoelastic. Cortical wash was done using Simcoe cannula. A polymethyl methacrylate Intraocular lens was implanted. Thorough wash of viscoelastic was done. Throughout the surgery viscoelastic was used to protect the corneal endothelium and to maintain the anterior chamber.

Printed forms (Proforma) was given to the trainees to fill both intra operative and post operative complications. Data of complications was obtained from these forms which are reviewed by supervisors.

Ethical clearance was obtained from the ethical committee Board of ASRAM Medical College, Eluru.

#### RESULTS:

In this study age range of the patients was 55-85 years. Both Intraoperative and Post operative complications were displayed in Table-1 and Table -2 respectively.

**TABLE – 1: INTRAOPERATIVE COMPLICATIONS:**

| COMPLICATIONS             | NUMBER |
|---------------------------|--------|
| Conjunctival flap         | 0      |
| Section too small         | 4      |
| Scleral tunnel            | 18     |
| Sideport entry            | 5      |
| Capsulotomy/Capsulorhexis | 12     |
| Capsular flaps            | 15     |
| Hydroprocedures           | 0      |
| Hyphaema                  | 0      |
| Prolapse into AC          | 10     |
| Nucleus drop              | 0      |
| Cortical wash             | 15     |
| IOL implantation/ dialing | 11     |
| Epithelial defects        | 4      |
| Suturing                  | 13     |

Most common intra operative complication that occurred in our study was with scleral tunnel (18) followed by cortical wash(15) and capsular flaps while doing can opener technique of anterior capsule removal (15), wound opposition(sutures applied to 13 patients), capsulotomy/capsulorhexis (12), dialing of IOL (11) and prolapsed of nucleus in to AC (10). Most of the trainees handed over to supervisors during cortical wash and scleral tunnel.

**TABLE – 2: POSTOPERATIVE COMPLICATIONS**

| COMPLICATIONS            | NUMBER |
|--------------------------|--------|
| Corneal edema            | 16     |
| Striate keratopathy      | 25     |
| Residual cortical matter | 6      |
| Shallow AC               | 3      |
| AC reaction              | 18     |
| Irregular pupil          | 3      |
| Decentered iol           | 0      |
| Hyphaema                 | 1      |
| Iris prolapse            | 0      |

Most common postoperative complication that occurred in our study was with striate keratopathy(25), followed by AC reaction(18) and corneal edema(16) followed by residual cortical matter(6), followed by shallow AC(3) and irregular pupil(3). Hyphaema was reported in one case.

#### DISCUSSION:

SICS is the basic surgical technique for trainees. SICS is less expensive and safer than Phacoemulsification. When compared to ECCE postoperative astigmatism is less with SICS. Monitoring trainees' surgical performance is a demanding task.

SICS both in training and practice PC rent and vitreous loss are potentially serious intraoperative complications. During training period of a resident, management of these complications is important .Adequate anterior capsulotomy is essential for a good surgical outcome so mastering of this anterior capsulotomy in learning period is essential.

Clear cornea in the postoperative period is important during training period. Postoperative corneal complications due to touching of the cornea with instruments, excessive manipulations and prolonged surgical period will lead to postoperative cornea complications like corneal edema and descemet folds. Minimal handling of the cornea (endothelium) by the trainee is essential during training period. Postoperative iritis can also be avoided by minimal manipulation of iris.

Generally training programmes are designed so that trainee performs parts of the surgery under supervision several times in order to gain confidence and perfection in the basic steps and is then encouraged to continue individually.

The program at our centre focuses on encouraging trainee to sit as primary surgeons with an experienced senior resident as assistant who supervises the trainee and guides him/her through every step and complication. The emphasis is always on completion of each step satisfactorily before moving on to the subsequent step. However, in this study ,we did not rate each step. Moreover, the supervisor lays higher stress in perfecting the later steps like cortical aspiration etc,as they are more crucial and decide the further course of surgery. Trainees are more or less acquainted with the initial steps as they might have performed them independently during the extracapsular surgeries.

The rate of complication in our study was within the acceptable range and whenever a complication arose, the trainee would be properly instructed step by step to handle the same or the case would be overtaken. The trainees were counseled regarding the occurrence of complications and were allowed to proceed only if they were comfortable enough to tackle the next steps. This way any chance of false increase of complication rate or increase in perceived difficulty of steps was avoided. However, the trainees in our study were mostly at the early stage of their careers, and the complication rate may be slightly higher compared with experienced surgeons at this phase of learning of small incision cataract surgery. Chance of complications has been shown to reduce at a rate of 1% in every successive case during training, mostly because of increasing experience and avoidance of fear toward complications as training progresses.

A limitation of our study was that a limited number of surgeries of each resident trainee were recorded for inclusion in the study. hence we could not perform a longitudinal analysis to determine the number of surgeries required to minimize the complications and achieve higher completion rates by trainees and a future study may be designed to obtain the same, based on which it can be indicated the number of surgeries to be appointed by training programmes to each trainee to maximize the output of their training periods.

#### CONCLUSION:

Stepwise and training under supervision can reduce intraoperative and postoperative complications with good surgical outcomes even in the hands of trainees. Management of the complications during training period is also essential.

It is a known fact that some residents are fast learners and have inherently better surgical skills than others who take longer time to develop the same amount of skills. Hence a better way of evaluation would be to analyze the subjective difficulties faced by trainees in an individualized manner and modify the training according to the learning capability of the particular trainee.

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**REFERENCES:**

1. Foster A, Gilbert C, Johnson G. Changing patterns in global blindness: 1988-2008. *Community Eye Health* 2008;21:37-9.
2. Ang M, Evans JR, Mehta JS. Manual small incision cataract surgery (MSICS) with posterior chamber intraocular lens versus extracapsular cataract extraction (ECCE) with posterior chamber intraocular lens for age-related cataract. *Cochrane Database Syst Rev* 2012;4:CD008811.
3. Tabin G, Chen M, Espandar L. Cataract surgery for the developing world. *Curr Opin Ophthalmol* 2008;19:55-9.
4. Salowi MA, Choong YF, Goh PP, Ismail M, Lim TO. CUSUM: A dynamic tool for monitoring competency in cataract surgery Performance. *Br J Ophthalmol* 2010;94:445-9.
5. Bhagat N, Nissirios N, Potdevin L, Chung J, Lama P, Zarbin MA, et al. Complications in resident-performed phacoemulsification cataract surgery at New Jersey Medical School. *Br J Ophthalmol* 2007;91:1315-7 17
6. Hennig A. Sutureless non-phaco cataract surgery: A solution to reduce worldwide cataract blindness? *Community Eye Health* 2003;16:49-51