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Evaluation of Safety and Efficasy of Phacosandwich Technique of Nucleus Delivery in MSICS

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Introduction

Cataracts remain a major cause of preventable blindness of world health organization report.

Manual small incision cataract surgery has emerged as the cost effective technique for cataract surgery when compared to ECCE and phacoemulsification.

This study is being undertaken to evaluate safety and efficacy of phacosandwich technique through the self sealing sclero-corneal tunnel incision.

This concept of reduction in size of incision had played measure role in bringing about faster stability of wound healing and surgical induced astigmatism which helped early rehabilitation of cataract patient post operatively.

The phacosandwich technique was first introduced by Luther fry in 1985.

Paul ernest in 1990 studied the surgical induced astigmatism at 3 month post operatively with 12 mm incision is 3.09D ,with 7mm incision 1.05D and with 4mm incision which was reduced to 1.32 D and 0.99D respectively at 8 month follow up.

This shows that smaller the incision lesser will be postoperative astigmatism.

Aim

To assess safety and efficacy of phacosandwich method of nucleus delivery in MSICS with reference to

1. Visual outcome
2. Intra operative and postoperative complication.
3. Preoperative and postoperative keratometry result**.**

Objectives

1. To reduce intra operative and postoperative complication of cataract surgery.
2. Significantly improvement in BCVA in post operative follow up visit.
3. Significantly lesser a surgical induced astigmatism and faster stability of wound healing postoperatively that helped in early rehabilitation of cataract patient.

Material and Methodology

Study design: An Observational study.

Study site: Tertiary care centre.

Study duration: 12 months.

Sample size: 30

Ethical Clearance: Obtained from institutional ethical committee.

Inclusion Criteria

- Adult patients, age group 50-75 yrs.
- Senile hyper mature cataract.
- Nuclear sclerosis grading 3-4.
- Patients who had given valid written informed consent.

Exclusion Criteria

- Posterior segment involvement
- Post uveitis changes
- Corneal opacity /haze /degeneration
- Patient with previous ocular surgery in operated eye
- Rigid and semi dilated pupil
- Patients are unfit for surgery due to systemic contraindications.

Methodology

The phacosandwich technique was first introduced by Luther's fry in 1985.

All patients signed the informed consent before surgery.

Preoperative assessment include complete bio microscopic examination of anterior and posterior segment, evaluation of cornea, grading of nucleus, keratometry ,tonometry and IOL power calculation .

After giving adequate local anaesthesia and pupillary dilatation achieved with tropic amide and phenylephrine eye drop.

A frown shape incision, measuring about 6mm were taken over sclera

Sclero- corneal tunnel was created, side port entry done and capsulorhexis was performed, anterior chamber entry done and incision is extended

Anterior chamber was kept full with viscoelastic during prolapse.

Hydro dissection was performed and nucleus prolapse in anterior chamber

Viscoelastic was injected above and below the nucleus

Microvectis on its upper curved surface was introduced under the nucleus with one hand and simultaneously sins key's hook or lens dialler introduced with other hand above the nucleus.

The nucleus was sandwich between these two instruments, while keeping sandwich away from the corneal endothelium under cover of viscoelastic and well engaged between two instruments and easily delivered through tunnel.

The cortex is aspirated with Simcoe canula, viscoelastic injected PCIOL is implanted. Tunnel wound is checked for any leakage and subconj.inj of dexamethasone + gentamycin given.

All patient received gatifloxacin and dexamethasone eye drop.

Figure 1

Result

All patients were examined on 1st post op day, 1st week, 4th week and 12th week.

Follow up include complete bio-microscopic examination, UCVA, BCVA and keratometry .

All patients had their preoperative BCVA less than 6/60. All surgeries were uneventful intra-operatively there are no intra-operative complication such as posterior capsular

rent, zonular dialysis, iridodialysis, irreversible corneal endothelial damage, descement detachment.

Post -operatively 3-4 eyes had localised corneal edema present which is cleared by next postoperative visit at one week .in none of our cases we encountered with hyphema, decentred IOL, wound leakage, hypotony.

On 1st post op day 3 (10%) eyes had UCVA of 6/6, at first post-operative week 5 (17%) eyes had UCVA 6/6 end of 12th post op week14 (44%) patient had UCVA 6/6 that is, significantly increase in the proportion of UCVA of 6/6 by 12 week.

Table 1: Result of postoperative Uncorrected Visual Acuity (n=30)

POST OPERATIVE DURATION	NUMBER OF EYES WITH VA 6/6	%
AT 1ST POST OP DAY	3	10
AT 1ST POST OP WEEK	5	17
AT 4TH POST OP WEEK	8	26.6
AT 12TH POSTOP WEEK	14	44

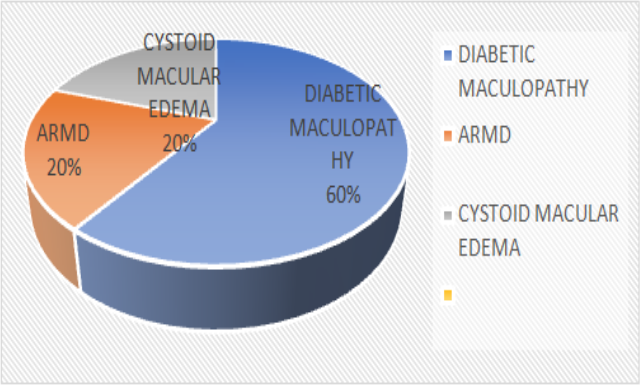
At 1st post operative week 10 (33.3%0) eyes had BCVA is 6/6 , at 4th week 15 (50%) eyes had BCVA is 6/6 at end of 12 th week 25(83%) eyes had BCVA is 6/6 .

The reason for not achieving BCVA of 6/6 in 5 eyes shown in pie chart.

Out five, three patients had diabetic maculopathy, one patient had age related macular degeneration.

Table 2:

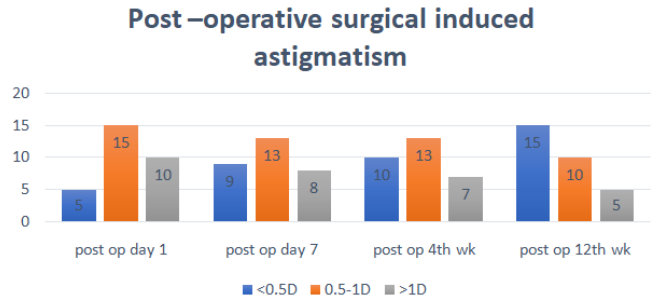
POST OPERATIVE DURATION	NUMBER OF EYES WITH VA 6/6	%
AT 1ST POST OP WEEK	10	33.3
AT 4TH POST OP WEEK	15	50
AT 12TH POST OP WEEK	25	83



Graph 1: Pie chart shows causes of not achieving BCVA 6/6.

On the first post operative day there is no significant difference between surgical induced astigmatism ,on first post op day 15 eyes had 0.5-1D post operative astigmatism while10 eyes had more than 1D , at end post op 12th week 15 eyes had less than 0.5 D surgical induced astigmatism .

Hence its prove that MSICS bringing the lesser postoperative astigmatism and which has helped in early rehabilitation of cataract patient.



Graph 2

Discussion

Senile age related cataract causes about 50% of world blindness. The techniques of cataract surgery have changed enormously in last few years. Now a days, technologies with the use of small self sealing incisions have taken the major lead in cataract surgery. Many different techniques exist for the nuclear management for MSICS the most popular among them are Michael

Blumenthal anterior chamber maintainer technique, Luther fry's phacosandwich, Peter Kansas phacofracture, manual multiphacofragmentation and irrigating Vectis technique.

We are using the phacosandwich technique, this technique ensure the safe nuclear delivery with minimal iatrogenic insult to corneal endothelium, the anterior instrument sinsky hook or lens dialler will help protecting the endothelium and microvectis ensures the controlled delivery of nucleus through tunnel.

This technique can adopt safely in hard nuclear cataract and hyper mature cataract was zonules are weak.

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Our technique can replace the conventional ECCE method and can achieve postoperative results similar to those instrumental to those of instrumental phacoemulsification.

The advantages of small incision technique are its reduced surgical time, minimal intraoperative and postoperative complication, early stabilization of postoperative refraction and faster visual recovery with minimal surgically induced astigmatism.

Conclusion

The phacosandwich technique is an effective, fast and economical alternative ensuring satisfactory astigmatism free rehabilitation of the patients.

This procedure can be effectively applied to clear the blockage of cataract related blindness in place where is the recourses for phacoemulsification facilities are not available.

We also recommended that since this technique does not require expensive instrumentation and visual recovery is rapid , one can safely and reliably employ this technique to achieve small incision cataract surgery.

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