

Astigmatic Profile in Various Types of Incision in MSICS

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Abstract

This study compares astigmatic outcomes of straight, frown, Blumenthal, and chevron incisions in MSICS, demonstrating minimal surgically induced astigmatism with chevron incision and highest with straight incision.

Keywords: MSICS, surgically induced astigmatism, Chevron incision, Frown incision, Blumenthal incision, Straight incision, Cataract surgery, Visual outcomes

Introduction

Cataract remains a major cause of preventable blindness. Manual small incision cataract surgery (MSICS) has emerged as the less expensive technique when compared with phacoemulsification. The basis of MSICS are the tunnel construction, the location of wound on the sclera with respect to limbus and shape of the wound. Geometric shape of external incision affects surgically induced astigmatism significantly. There are different types of incision like straight, frown, batwing (blumenthal), chevron. This study is being undertaken

to evaluate the astigmatic change and outcome with straight, frown, batwing and chevron type of incision

Aim and objectives

Aim: to evaluate astigmatic changes and outcome of MSICS with straight, frown, batwing and chevron type of incision

Objectives

- to evaluate post op astigmatism in straight, frown, batwing, and chevron incisions in MSICS.
- To find out incision which produce least change in astigmatic profile.

Materials and Method

Study design: an interventional study

Study setting: Ophthalmology dept Dr.SCGMC Nanded

Study duration: 6 months

Study subjects: patients admitted for cataract surgery and operated cases of MSICS

Sample size: 40 patients

Ethical clearance: Obtained from institutional committee

Inclusion and Exclusion Criteria

Inclusion criteria

- adult patients, age group 45-70 yr
- uncomplicated senile cataract with nuclear sclerosis grade 1-4. consent.
- Patients who have given valid written informed

Exclusion criteria

Patients having comorbid conditions other than cataract which could affect visual outcome such as posterior segment pathology, corneal opacity, keratoconus, high myopia or hypermetropia, intraoperative complications.

- Pre op atigmatism recorded in the form of K1K2
- Peribulbar block given.
- pts are operated with different types of incision by MSICS.
- Post op vision and astigmatism is recorded in the form of K1K2 by automated keratorefractometer on day 7 and day 40.
- Mean of difference between K1K2 preoperatively compared with means of difference between K1K2 postoperatively
- Diopteric power of cylindrical no.is also measured for good vision on day 40.

Images of types of incision



Figure 1: Straight

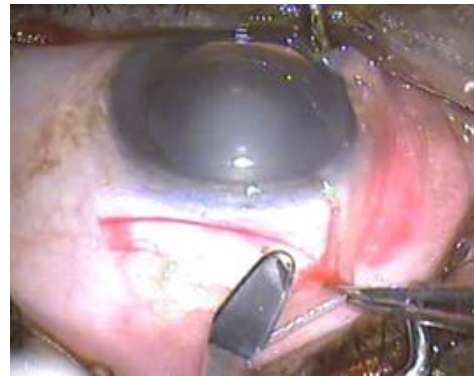


Figure 2: Frown



Figure 3: Bluementhal



Figure 4: Chevron

Results

Table 1:

group 1 (straight incision)	post op day 7	post op day 40
astigmatism (in dioptries)	1.90+ _{-0.61} (BCVA6/9)	1.77+ _{-0.77} (BCVA6/6)
group2 (frown incision)	post op day 7	post op day 40
astigmatism (in dioptries)	1.00+ _{-0.45} (BCVA6/12)	0.90+ _{-0.3} (BCVA6/9)
group3 (batwing incision)	post op day 7	post op day 40
astigmatism(in dioptries)	1.2+ _{-0.33} (BCVA6/12)	1.00+ _{-0.22} (BCVA6/6)
group4 (chevron incision)	post op day 7	post op day 40
astigmatism(in dioptries)	0.75 + _{-0.11} (BCVA6/6)	0.50+ _{-0.12} (BCVA6/6)

Discussion

Cataract surgery has improved dramatically in recent years, primarily for early rehabilitation and minimal surgically induced astigmatism. Phacoemulsification has become the most favoured procedure for cataract surgery in industrialised area. MSICS is the most favoured procedure in developing countries. Our study demonstrates that group 1 (pts with straight incision) pts had significantly greater astigmatism than group 2 and group 3. Group 4 (pts with chevron incision) has min astigmatism in all 4 groups on day 7 and day 40. our study establishes that straight incision has highest astigmatism, frown and blumenthal has nearly same, while chevron incision has laest astigmatism. - Chevron incision has more learning curve and the tunnel formation is hard as compared to other types of incision. -Straight incision easy to learn but most astigmatism producing incision.

Conclusion

All these incisions produce less astigmatism if placed posteriorly on the sclera. cataract surgery is soon turning into a refractive procedure, with aims for early restoration of vision and inducing lesser astigmatism. Furthur studies with bigger sample size and longer follow up periods are needed on this subject, also furthur studies with corneal biomechanics and topography are needed to throw furthur light on this subject.

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