



COMPLICATED CATARACT DUE TO UVEITIS: WHICH ONE TO CHOOSE, PHACOEMULSIFICATION OR SMALL INCISION CATARACT SURGERY.

Ophthalmology

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ABSTRACT

There is limited literature available pertaining to SICS in management of uveitic cataract. In this study to compare visual outcome and potential complications of phacoemulsification versus manual SICS in patients of complicated cataract due to uveitis a randomized, prospective, interventional and comparative clinical trial carried out on 42 eyes. The patients were randomly divided by draw of lots into two groups (A & B). Overall 94.58% SICS patients showed final visual outcome very well comparable with the BCVA in patients who underwent phacoemulsification. From the current study, it can be concluded that manual small incision cataract surgery provides comparable visual outcome with minimal complications at long term follow up in patients of uveitis as seen after phacoemulsification. This can be very helpful in developing countries like India where there is a huge backlog of cataract patients.

KEYWORDS

uveitis, complicated cataract, manual SICS, phacoemulsification

BACKGROUND

uveitis is an important cause of ocular morbidity and vision loss in the population⁽¹⁾. Cataract in uveitis develops as a result of the intraocular inflammation and from chronic corticosteroid usage or more often from both. Cataract developing in an eye with a history of chronic or recurrent uveitis has historically been called cataracta complicata and indeed, the uveitic cataract is complicated cataract⁽²⁾.

One of the most daunting tasks for an ophthalmic surgeon is the management of complicated cataracts. It is complicated both from the standpoint of technical aspects of the surgery itself (limited access secondary to posterior synechiae, small pupil, shallow anterior chamber, peripheral anterior synechiae, pupillary membrane, and sphincter sclerosis, iris delicacy, zonulolysis. and vascular abnormalities and pre-existing glaucoma and also because of the high likelihood of an exuberant postoperative inflammatory response which can ruin the desired surgical outcome⁽³⁾. With improved knowledge of disease processes, optimal use of immunosuppressive for perioperative control of inflammation, minimally invasive surgical techniques, availability of biocompatible intraocular lens material and design and surgeons trained in performing complicated cataract surgeries and beforehand management of postoperative complications, the outcome has been maximized yet, despite these advances surgeons are frequently still disappointed with the visual outcome of cataract surgery in these patients. This typically occurs as a result of two things: 1. damage done to the macula or optic nerve long before the time patient has arrived for cataract surgery, 2. through the consequences of recurrent or chronic, even "low grade" inflammation; and significant ongoing chronic or recurrent inflammation which sabotages an initially good visual result from cataract surgery.

Our Medline search showed that while efficacy of phacoemulsification was compared with ECCE for uveitic cataract, there is limited literature available pertaining to SICS in management of uveitic cataract. SICS will not only reduce the cost of management but also increase the availability of treatment to many patients as larger number of surgeons will be able to perform this surgery. So in this study we compared visual outcome and potential intra-operative and post-operative complications of two different techniques of lens extraction i.e. phacoemulsification versus manual SICS in patients of complicated cataract due to uveitis.

MATERIALS AND METHODS

A randomized, prospective, interventional and comparative clinical trial carried out on 42 eyes of 42 patients at Mayo institute of medical science, Barabanki, Uttar Pradesh during the January 2016 - December 2018. patients diagnosed as case of complicated cataract due to uveitis attending outpatient department and uvea clinic admitted and operated for cataract

Exclusion criteria-

associated other ocular disease for example corneal degeneration or dystrophies or corneal opacity, strabismus, subluxated or dislocated lens, congenital or primary open angle or angle closure, Patient had previous trabeculectomy, Retinal vascular disease, previous ocular surgery/laser treatment, Major ocular trauma, Retinal detachment, choroiditis.

A detailed history taken and complete ocular examination, including Best Corrected Visual Acuity (BCVA), slit-lamp examination, applanation tonometry, gonioscopy, fundus examination, keratometry & biometry was carried out.

The patients were randomly divided into two groups (A & B). In group A, (n= 20) phacoemulsification was done and in group B (n= 22) manual SICS was done.

SURGICAL PROCEDURE

1- Incision –

Group A - Clear corneal incision of adequate length

Group B astigmatic neutral incisional on sclera given

- 2- Pupil Expansion & iris surgery. One or the other or in combination
 - a. bent Kuglen hook. "push-pull" instrument is used.
 - b. pupillary membrane removed using a pair Kelman-Mcpherson forceps.
 - c. multiple sphincterotomies by means of intraocular scissors, (taking care not to compromise the anterior capsule).
 - d. Disposable iris hooks are easy to place through multiple corneal paracentesis, used in small atonic pupil to dilate and maintain the dilatation of pupil throughout the procedure.
 - e. synechiolysis,
 - f. stretch pupilloplasty, stretching can be done by spatula, sinskey hook, osher hook, graether's hooks.
- 3- Continuous Circular Capsulorhexis

Group A- is preferably keeping the size of the capsulorhexis slightly smaller but when the pupil size is small; the capsulorhexis inevitably needs to be larger than the pupil.

Group B- Usually done by pull and push method: singh's procedure

- 4- Hydrodissection - minimal

- 5- **Group A**-Phacoemulsification vertical chop in situ chop technique.

Group B-nucleus prolapse in anterior chamber and Nucleus removal

- 6- Irrigation and Aspiration followed by Intraocular Lens Implantation of Hydrophilic acrylic material [good uveal biocompatibility].

Post operative assessment Patients were be followed-up at day 1, 3, 7; then at 2nd week, 4th week, 8th week and 6th month

Statistical Analysis : Student's unpaired 't' test and chi square test were used with the help of SPSS 21 software

RESULTS

Mean age in group A was 54.85 years and in group B 52.95 years. (p =

0.2944). The baseline IOP in Group A (Phacoemulsification) was 17.75 + 3.1mmHg and in Group B (SICS) was 17.37 + 3.06 (p = 0.69). Pre-operatively aqueous cells and flare were less than grade 1 and At the first week inflammatory reaction was seen in both groups. But it was successfully controlled by post-operative steroid coverage (table 2).

Overall Rate of complications noted were more in SICS group when compared to phacoemulsification (table 3).

Table 1- pre and post operative visual acuity

GROUPS	pre-operative BCVA (LOGMAR)	post-operative BCVA first day.	post-operative BCVA after 1 week.	post-operative BCVA after 1 month.	post-operative BCVA after 6 months.
Group A	1.4091+0.4764	0.3489+0.1909	0.2862+0.1990.	0.2533+0.1901.	0.2746+0.2043
Group B	1.4061+0.5410	0.5219+0.3267	0.4334+0.2070	0.3412+0.1649.	0.3860+0.1857.
p value	p = 0.9849).	0.0452 (significant)	0.0241 (significant)	0.1165 (not significant)	not significant (p = 0.7715).

(table 2)-AQUEOUS CELLS and FLARE

	First post operative day		First post operative week	
	Aqueous cells	Aqueous flare	Aqueous cells	Aqueous flare
Group A	0.65 + 0.67	0.75 +0.71	0.20 + 0.41	0.25 +0.44
Group B	1.32 + 0.99	1.45 +1.1	0.22 + 0.42	0.318+0.56
P value	0.015 (significant)	0.018 (significant)	0.87 (not significant)	0.667 (not significant)

Table 3 Comparison of Intra-operative and post-operative complications

Complications	group A	Group B
Intra-operative		
Iridodialysis	0	2 (9.1%)
HypHEMA	0	2 (9.1%)
Posterior capsular rupture	2(10%)	1 (4.54%)
Post operative		
Corneal oedema	1 (5%)	1 (4.54%)
Pupillary membrane	1 (5%)	2 (9.1%)
Macular oedema	0	2 (9.1%)
Posterior synechia	1 (5%)	1 (4.54%)
IOL deposits	1 (5%)	3 (13.6%)
PCO	2 (10%)	3 (13.6%)
Secondary glaucoma	1 (5%)	1 (4.54%)

CONCLUSIONS-

More recent publications have reported a considerable decrease in the incidence of intraoperative and postoperative complications in a case of cataract extraction in uveitis. The most likely reasons for this vast improvement would appear to be due to better prospects to control inflammation perioperatively and the rapid evolution in microsurgical techniques that has occurred in recent years⁽³⁾.

The traditional approach to cataract surgery in uveitic eyes has been simple lens extraction as reported by Ridley et al in 1965. Thereafter many studies were done on ECCE and IOL implantation. Foster et al (1989) and chung and Yeh (1990) reported 72-87% of patients achieved a stable post-operative visual acuity of 6/12 or better⁽⁴⁾.

Thereafter with the introduction of phacoemulsification in management of cataract in uveitis patients less complication with better visual outcomes have been noted⁽⁵⁾ Manual small incision cataract surgery (SICS) was then introduced and SICS is favoured as it is having easy learning curve, less machine dependent, cheaper and useful in nations with huge backlog of cataract blindness. In developing countries like ours with limited resources, SICS would be a better option for such cases⁽⁶⁾. Marc F.G Estafanous et al (2001) supported phacoemulsification cataract extraction with posterior chamber intraocular lens implantation in patients with uveitis⁽⁷⁾. Jagat Ram and Amod Gupta et al (2010) noted that 71.30% patients visual acuity attained between 6/12 to 6/6⁽⁸⁾. We have compared our findings of patients undergoing SICS to the previous studies of phacoemulsification to determine the efficacy of SICS. At the end of the study 54.54% patients of SICS had visual acuity of 6/12 or better. Overall 94.58% patients showed final visual outcome very well comparable with the BCVA in patients who underwent phacoemulsification. in phacoemulsification the vision restoration is earlier with slightly better final visual acuity due to less postoperative inflammation. But almost comparable visual acuity is probably due to control of the inflammatory response with help of topical and systemic steroid medications in SICS patients.

Difference in post-operative inflammatory response may be due to more handling of uveal tissue during the procedure of SICS. The

comparatively small incision and reduced trauma to uveal tissue in phacoemulsification are known to decrease early postoperative inflammation and to induce less blood-aqueous barrier damage, both of which are linked to the development of macular oedema. All the complications were successfully managed according to the recommended treatment guidelines. **Estafanous et al, (2001)** in a retrospective study of 32 patients with an average follow-up of 20 months, reported recurrence of uveitis in 41%, macular oedema in 15% and PCO in 62% of patients⁽⁷⁾. In another study by **Suresh and Jones, (2001)** a similar prevalence of postoperative uveitis (36%) but lower prevalence of macular oedema (2%) was reported during an average follow-up of 24.1 months⁽⁹⁾. **Krishna et al (1998)** showed that postoperative uveitis, macular oedema and PCO occurred in 53%, 56% and 58% of patients, respectively, over a mean follow-up of 81.4 months⁽¹⁰⁾. The differences in the prevalence of complications between our study and these studies seem to be related to differences in the definition of complications or in the patient populations.

We concluded Manual small incision cataract surgery is a good alternative in management of cataract in uveitic patients. Slight modifications in manual small incision cataract surgery will go a long way in patient's visual rehabilitation as more surgeons will be able to treat cataract in patients of uveitis. This will not only cut down the cost factor but also increase the reach of treatment to the patients specially in developing countries like India.

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