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## Decision making in surgical management of Uveitic cataracts

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### Abstract

Cataract is a major complication of chronic cases of uveitis. Surgeries in cases of uveitic cataracts are often complicated due to various factors like non-dilating pupil, presence of posterior synechiae and recurrence of inflammation in post-op period. Various opinions exist regarding the preferred surgical technique, either SICS or phacoemulsification and the type of IOL used in such cases. This is review article of all the studies conducted so far regarding the surgical management of uveitic cataracts and their visual outcome.

**Keywords:** Uveitic cataract, complicated cataract, non-dilating pupil, posterior synechiae, small incision cataract surgery, phacoemulsification, visual outcome, rate of complications

### Introduction

Cataract is a known complication of long-standing uveitis. Performing surgery in post-uveitic cataract cases is faced with many challenges. These include poor visibility due to band keratopathy and corneal deposits, poor pupillary dilatation, pupillary membrane formation, bleeding from fragile vessels and formation of synechiae. Extra-capsular cataract extraction which includes small incision cataract surgery and phacoemulsification continue to be the most common types of cataract surgeries performed today. But no single technique has been proven to be optimal for post-uveitic cataracts as different uveitic syndromes respond differently to various types of surgeries. Most authors are of the opinion that with careful patient selection, diligent surgery and appropriate perioperative care, phacoemulsification (phaco) with intraocular lens (IOL) implantation is safe and effective in most patients with uveitis<sup>[1, 2]</sup>. Manual small incision cataract surgery (SICS) has emerged as an alternative to phacoemulsification in settings with high surgical volume or regions with limited access, over the last decade; it is significantly faster, requires minimal instrumentation and can be performed in all settings<sup>[3]</sup>. However, safety and efficacy of SICS in uveitis has not been established.

### Preferred Surgical Technique

In most places phacoemulsification is the preferred technique of cataract surgeries but in cases of uveitic cataracts fragmentation of extremely dense nucleus with extensive posterior synechiae can be difficult with this procedure<sup>[4, 5]</sup>. Therefore scleral tunnel incisions are frequently made to manually extract the nucleus in such cases. Also the facility for phacoemulsification is not available in rural and semi-urban settings and patients are usually referred to tertiary care center for further management. In such circumstances SICS can be easily performed as it requires minimal instrumentation. Surgical speed and efficiency is of paramount importance in a country like India where there is a high burden of cataract. The mean surgical time of SICS is much lower than that of phacoemulsification<sup>[18]</sup>.

### Surgical time and visual outcome

Bhargava *et al.*<sup>[6]</sup> found out SICS to be a safe and effective technique for management of post-uveitic patients provided inflammation is well-controlled pre-operatively for atleast 3 months. The mean surgical time for SICS was 10.2±3.8 minutes. Cook *et al.*<sup>[7]</sup> conducted a randomized control trial in a case series of 200 African patients and found no significant difference in the incidence of intraocular complications and uncorrected visual acuity on first postoperative day between Phacoemulsification and SICS.

In another prospective randomized study conducted by Venkatesh *et al.* [18] the surgical time in SICS (8.8±3.4 min) was significantly lower than that for phacoemulsification (12.2±4.6 min) for white cataracts. Another study by Ruit *et al.* [9] conducted in Nepal found excellent visual outcome and low complication rate for both SICS and phaco in advanced age related cataracts. SICS had lower procedure time and cost as compared to phaco. However, the mean surgical time was significantly higher in both groups for post-uveitic cataracts as compared to that in age related cataracts [18]. Additional procedures like synechiolysis, iris hooks or pupillary membrane peeling required in post-uveitic cataracts account for the difference in procedure time.

In a recent study by Bhargava *et al.* [18] the postoperative visual acuity at 6 months was excellent in both the techniques, however a slightly more number of patients achieved a visual acuity of 20/60 or better with phaco than with SICS. This could be explained by higher surgically induced astigmatism in SICS due to larger incision.

### Rate of complications

In most of the literature that we reviewed there was no significant difference in complication rates between SICS and Phaco for uveitic cataracts. Patients in Phaco group had slightly lower incidence of Cystoid macular edema and persistent uveitis while those in SICS group had slightly lower incidence of posterior capsular opacification. In a study comparing the endothelial cell loss and other complication rates between SICS and Phacoemulsification for cases of post-uveitic cataract, Bhargava *et al.* [12] found no significant difference between the two. However, increased anterior chamber manoeuvring due to additional procedures may lead to significantly higher endothelial cell loss. Haripriya *et al.* [10] reported excellent visual outcomes with low complication rates following phacoemulsification and SICS in a retrospective analysis of large series of patients operated by surgeons well versed with both the techniques. Zhang *et al.* [11] performed a meta-analysis of six randomized control trials comparing phacoemulsification and SICS for age related cataracts and didn't find any significant difference in terms of visual rehabilitation.

**Surgical outcomes in reported series of patients with uveitic cataract**

Author	n	Year	Type	P	CDVA (%)	Complications (% of cases)
Bhargava <i>et al.</i> [6]	54	2014	R	SICS	93	PCO (16.7), CME (14.8), persistent uveitis (9.2), ERM (7.4)
Bhargava <i>et al.</i> [18]	66 & 60	2014	P	Phaco+SICS	90.9 & 88.3	PCO(16.7 & 15), CME (12.1 & 15), Persistent uveitis (13.6 & 16.7), Glaucoma (6 & 5), ERM (6&5)
Kosker <i>et al.</i> [5]	55	2013	P	Phaco	94.5	PCO, CME, Recurrent uveitis (12.7), raised IOP (15.4)
Ram <i>et al.</i> [14]	108	2010	R	Phaco	92	PCO (28.7), CME (21.3), Recurrent uveitis (5.5), ERM (4.6), Synechia (25)
Kawakuchi <i>et al.</i> [15]	131	2007	R	Phaco	85	PCO (23.7), CME (6.1), IOP elevation (8.4), posterior synechia (6.1)
Hazari & Sangwan [16]	106	2002	P	Phaco+ECCE	87	PCO(14.9), CME (20.9), Persistent uveitis (23.9)
Estafanous <i>et al.</i> [17]	39	2001	R	Phaco	95	PCO(62), CME(33), Recurrent uveitis(41), ERM(15)

CDVA: corrected distance visual acuity, R: retrospective, P: prospective, Phaco: phacoemulsification, SICS: small incision cataract surgery, ECCE: extracapsular cataract extraction, PCO: posterior capsular opacification, CME: cystoid macular edema, ERM: Epiretinal membrane

### Preferred Type of Intraocular Lens

The type of intraocular lens implanted also impacts the final visual outcome and rate of complications. The rate of inflammation is inversely related to intraocular lens biocompatibility. Abela-Formanek *et al.* [13] in a prospective study on patients with uveitic cataract operated by phacoemulsification technique and randomly implanted different types of IOL found that hydrophilic acrylic material had good uveal but worse capsular biocompatibility. Hydrophobic acrylic material had lower uveal but better capsular biocompatibility. Silicone lens had higher small cell count and more severe anterior capsular opacification but comparable results in terms of posterior capsular opacification and better in terms of foreign body giant cells that those with hydrophobic acrylic. After comparing the results with control group there was no significant difference in inflammation after implantation of IOLs in uveitic eyes. The recovery of blood aqueous barrier was also similar in both the groups, which indicated that foldable IOL implantation is safe in uveitic eyes. An extensive literature review carried out by Leung *et al* couldn't conclude decisively as to which type of IOL is better than the others in terms of visual and clinical

outcomes.

### Conclusion

In our extensive review of literature we found out both SICS and Phacoemulsification to provide excellent visual outcome and similar rate of complication in patients with uveitic cataract. However in places with limited resources and high burden of cataract cases, SICS turns out to be more useful due to minimal instrumentation and shorter procedure time. Among various types of IOLs, all the foldable ones made of biocompatible material showed better visual outcome and less amount of inflammation in uveitic cataract cases.

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