

## Recurrent uveitis after phacoemulsification

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### Abstract

**Aim:** To evaluate the cases of recurrent post operative uveitis after phacoemulsification.

**Introduction:** Post operative uveitis is a common finding after intra-ocular surgery and respond well to corticosteroids. After phacoemulsification the trend is changing and many cases with recurrent inflammation are specific with phacoemulsification which respond well to steroidal therapy and in most cases invasive intervention are not required. In this study we have seen twelve cases of phacoemulsification associated with recurrent attacks of anterior uveitis after completing routine course of medication post operatively.

**Materials and Methods:** This is a retrospective study of 565 cases of uncomplicated cataract (212 SICS + 353 Phacoemulsification) surgery done by a single surgeon in a period of two years between April 2014 to March 2016.

All the patients did well during 6 weeks of routine treatment. But 12 patients after completing topical steroid course developed symptoms like decreased vision, photophobia, redness and pain of mild to moderate degree. Slit lamp examination showed mild to moderate circum ciliary congestion with aqueous cell +1 to +3 with some flare and few fine keratic precipitates in some cases. Systemic evaluation was done in all the cases to find out any systemic association with uveitis.

**Result:** All (12 cases) were started with topical corticosteroid 4 times to one hourly depending on grade of uveitis and tapered in next 4-6 weeks. Supportive cycloplegics were given till cells were present in anterior chamber. No oral corticosteroids were given in first attack of uveitis. 6 cases recovered well with this treatment regime. Six cases had recurrent attacks and were given repeat dose of topical steroids and cycloplegic along with oral prednisolone 1mg/kg in weekly tapering doses. 5 cases responded well to single course of oral steroid while one had to give twice full course of oral steroids along with 4 course of topical steroids.

**Conclusion:** Various causes like cortical matter in AC, residual viscoelastic or metallic dust may cause recurrent uveitis after cataract surgery. But Metallic dust as a cause is specific to phacoemulsification procedure and may be the main culprit for recurrent inflammation in this study. Our study suggest that chronic recurrent cases of anterior uveitis after phaco-emulsification of mild to severe severity can be safely treated by topical and if needed by adding oral steroid without invasive interventions.

**Keywords:** Non infectious, Phacoemulsification, Recurrent uveitis, SICS.

### Introduction

Post operative uveitis is a common finding after intra-ocular surgery and respond well to corticosteroids but recurrent uveitis is uncommon and usually considered to be due to indolent infections that to mostly by propione-bacterium acne.<sup>1</sup> Confirmatory diagnosis is made by culture of material from the capsular bag or vitreous by invasive interventions. These cases are treated by intra-vitreous and intra-capsular antibiotics, sometimes need vitrectomy and even IOL explantation along with capsular bag removal. But after phacoemulsification the trend is changing and many cases with recurrent inflammation are specific with phacoemulsification which respond well to steroid therapy and in most cases invasive intervention are not required.

In this study we have seen twelve cases of phacoemulsification associated with recurrent attacks of anterior uveitis after completing routine course of medication post operatively. This type of uveitis was non-infectious in origin and responded well to topical and some time systemic steroids and invasive interventions was not required. Incidence of such attacks are more in phaco-emulsification as compared to manual small incision cataract surgery. Incidence related specifically with phacoemulsification is not

clearly understood but probably related with the metal dust which normally sheds off from instruments during manipulations in the anterior chamber.

### Material and Method

This is a retrospective study of 565 cases of uncomplicated cataract (212 SICS + 353 Phacoemulsification) surgery done by a single surgeon in a period of two years between April 2014 to March 2016.

#### Criteria of Inclusion:

1. Uncomplicated cataract cases.
2. Case in which surgery went uneventful i.e. without complications and challenges.

#### Criteria of Exclusion:

1. Complicated or traumatic cataracts.
2. Cases with complications or challenges during surgery.
3. Uveitis associated with vitreous involvement.
4. Patients with systemic disorders which may be associated with uveitis.

All cases of cataract were evaluated thoroughly by doing complete pre-operative work-up. All pre-operative, intra-operative and post-operative medications were same in all the cases.

All cases of phaco-emulsification underwent cataract surgery under subtenon anesthesia with 2.2 or 2.8 mm limbal incision at either superior or supero-temporal or temporal location with a single side-port incision. Phaco was done by same surgeon with same phaco machine in all the cases. Anterior chamber was formed by viscoelastic (hydroxy propyl methyl cellulose-HPMC). Phaco was done by stop and chop or direct chop technique. Cortical clean up was done by co-axial irrigation-aspiration method. In all cases hydrophobic acrylic lenses of same manufacturer were used and in the beg implantaion was assured after thorough cortical clean up from anterior chamber and also from behind the lens. Wound integrity was checked before removing speculum.

All cases of small incision cataract surgery were done under peribulbar anesthesia by making superior scleral incision of about 6mm about 1-2 mm away from limbus. Scleral tunnel was made and anterior chamber was formed by HPMC. Either CCC or linear capsulotomy was done depending on the hardness of nucleus, and nucleus was removed by fish-hook technique. Cortical clean-up was done by simcoe two way I/A cannula. In the beg PMMA lens implantation was assured after thorough cortical clean-up from anterior chamber and also from behind the lens.

Intra-cameral cefuroxime was given in all cases. After surgery, in both the technique wound stability was checked and any possibility of leakage was ruled out. Post-operative sub-conjunctival cefuroxime and dexamethasone was given in all the cases. Patching was done for one day and cases were evaluated on 1st post-operative day. Post operative treatment was systemic ciprofloxacin for 3 days and topical antibiotics, NSAIDs, and corticosteroids in tapering dose for next 6 weeks. Cyclopentolate was given in all the cases for first 5 days.

All the patients did well during 6 weeks of routine treatment. But 12 patients after completing topical steroid course developed symptoms like decreased vision, photophobia, redness and pain of mild to moderate degree. Slit lamp examination showed mild to moderate circum ciliary congestion with aqueous cell +1 to +3 with some flare and few fine keratic precipitates in some cases. One case had big mutton fat keratic precipitate also. Hypopyon or vitreous involvement was not seen in any case. Systemic evaluation was done in all the cases to find out any systemic association with uveitis.

All the symptomatic cases were started with topical corticosteroid in doses 4 times to one hourly depending on grade of uveitis and tapered in next 4-6 weeks. Supportive cycloplegics were given till cells were present in anterior chamber. No oral corticosteroids were given in first attack of uveitis. In recurrent cases oral steroid (prednisolone 1 mg/kg) in weekly tapering doses was given along with repeat dose of topical steroids and cycloplegic.

## Results

Our study include 565 cases of cataract surgery out of which 353 undergoes phacoemulsification with hydrophobic PCIOL, and 212 under goes SICS with PMMA lenses. 306 were male and 259 were females.

Table 1 shows the age wise, gender wise distribution of patients, maximum number patients were in 61-80 years age group with minimal in 21- 40 tears and nil in below 20 years.

**Table 1: Age Group Distribution**

Age Group	Males	Females	Patients with uveitis
0-20 yrs	0	0	0
21-40 yrs	2	3	Nil
41- 60 yrs	113	96	4
61-80 yrs	184	158	8
Above 80 yrs	7	2	Nil

It was found that post-operative uveitis was seen in 12 cases of phaco-emulsification (out of 353 cases) after completing routine course of post-operative medications while none of the cases of SICS (259 cases) had post operative uveitis in this study. All the cases with post operative uveitis recovered well and completly with topical only or combination of topical and systemic steroids. No invasive intervention was required in any of these cases.

Table 2 Demonstrate the onset of symptoms after routine post operative treatment was stopped. Out of 12 cases, 7 cases were present within 7 days while 5 cases were present within 15-30 days of discontinuation of postoperative treatment.

**Table 2: Onset of Symptoms**

No of Days after completion of post operative treatment	No. of patients
With in 15 day	7
16 - 30 days	5

Grading of postoperative inflammation in shown in (Table 3). Grading of uveitis in 12 cases were done, 5 cases were having mild uveitis (cells +/- to 1+), moderate uveitis (cells 1+ to 2+) was present in 5 cases, while 2 cases were having severe uveitis (cells 3+ to 4+).

**Table 3: Type of uveitis**

Type of Uveitis	No. of patients suffered
Mild (Cells +/- to 1+)	5
Moderate (Cells 1+ to 2+)	5
Severe (Cells 3+ to 4+)	2

**Table 4: Treatment given**

Topical Steroids once	6 case
2-3 times topical steroid + 1 course of oral steroids	5 cases
4 times topical steroids + twice oral steroids course	1 case

**Table 5: Duration of complete recovery**

Duration of complete recovery	No. of cases
Within 6 weeks	6 cases
6 weeks to 6 months	5 cases
6 months to 15 months	1 case

All 12 cases were treated with steroids. Table 4 and 5 demonstrate the mode of steroid use and recovery after treatment. 6 cases responded well to single topical dose of steroids and had no recurrence after tapering them. 5 cases had recurrence of uveitis after initial topical steroid treatment and had final recovery in 6 months post-operatively after repeating topical steroids 2-3 times and were treated with oral steroids also while one case had recurrent attacks after stopping steroids and had to give oral steroid more than once along with four time course of topical steroids and had final recovery in about 15 months post-operatively.

All but one case had regained the visual status similar to their final correction given 1 month post operatively. One case who had final recovery in 15 months had loss of 4 lines on Snellen's chart and had final visual status as 6/36 BCVA due to cystoid macular edema. Intra ocular pressure was measured regularly in all the cases during treatment and no case had steroid induced glaucoma during the treatment.

## Discussion

Any cataract surgery either phaco-emulsification or small incision cataract surgery usually has very little post operative inflammation and respond well to topical steroids and non-steroidal anti inflammatory agents. Oral anti-inflammatory agents are not required in routine cases. Recurrent inflammation or non resolving inflammation is usually considered to be because of some indolent infection and need invasive interventions. Wenke et al<sup>3</sup> reported nine cases of chronic endophthalmitis in their study and cases were associated with hypopyon and capsular bag infiltration. Contaminated viscoelastics<sup>4</sup> can also be a culprit for chronic and recurrent endophthalmitis. Propionibacterium acni<sup>1</sup> is also found as a potent cause of chronic endophthalmitis in many studies. But P Saraf<sup>2</sup> in his study on chronic uveitis after phaco-emulsification found that no invasive intervention needed in mild uveitic cases and they respond well to topical steroids.

In our study twelve cases had mild to severe recurrent uveitis after phaco-emulsification and they

responded well to topical steroids and in few cases required oral steroids also. No invasive intervention was done in any of these cases. This suggest the possibility of non-infectious origin. The exact cause in not clear in this study. None of the cases of manual SICS had such recurrent uveitic findings in this study so probability of cause specifically related to phaco-emulsification can't be ruled out.

Jehan et al<sup>5</sup> reported 10 cases of severe intraocular inflammation with memory lenses but incidence happened on an average of 7.8 post operative day. In our study initial inflammation was not abnormal but had recurrence after about 6 week of surgery once steroids were withdrawn. We used hydrophobic Acrylic lenses of same manufacturer in all cases though lens design was different in different cases.

Madhavan<sup>6</sup> reported a mild but significant toxic effect on cell culture with some visco-elastics. It may be presumed that there may be some residual visco-elastic in anterior chamber or behind the lens and that may cause chronic inflammation.

Metallic dust from the phaco needle, irrigation aspiration cannulas and from instruments like chopper or dialer may shed in anterior chamber, especially during manipulations when instruments hit each other. Many a times instruments are rough and old if we do not replace them on time. This metallic dust may deposit on iris and over other parts of anterior and posterior chamber and may be the cause of recurrent inflammation. Though this statement is more theoretical and need proper research. Jose juan Martinez et al<sup>7</sup> found in his study about the similar recurrent inflammation after phaco-emulsification cataract surgery that some metallic particles were recovered from anterior chamber and on analysing these particle they found that particles were made up of iron, chromium and nickle and similar composition of material was found in hand piece also, so they concluded that probably these particles were from handpiece. They studied other instruments also and found that Phaco tip was made up of aluminium and titanium whileinsky hook was made up of iron, chromium nickle and cobalt.

Choudhary M, Nayak B K et al<sup>8</sup> have also studied similar particles found in anterior chamber and found that the metallic wrench which we use to tighten the phaco tip may shed off some metallic dust over the phaco tip which may reach in to anterior chamber and can cause anterior chamber inflammatory reactions.

## Conclusion

Various causes like cortical matter in AC, residual viscoelastic or metallic dust may cause recurrent uveitis after cataract surgery. But Metallic dust as a cause is specific to phacoemulsification procedure and may be the main culprit for recurrent inflammation in this study. But proper research and analysis of content of anterior chamber is needed is needed before reaching to

the final conclusion. Our study suggest that chronic recurrent cases of anterior uveitis after phacoemulsification of mild to severe severity can be safely treated by topical and if needed by adding oral steroid without invasive interventions like intra-vitreous approach or vitrectomy, if response is satisfactory. But we should be very sure about the non-involvement of vitreous and should observe the response carefully. Also as lot of instruments are used inside the eye during this procedure so maintenance of good quality of instruments and taking lot of care while handling them inside the eye is important to avoid instrument related complications.

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