

## Original Article

### Outcome of cataract surgery in eyes with uveitis

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#### Abstract

**Purpose:** To assess the outcome of cataract surgery in patients with uveitis without the use of prophylactic high dose (> 5-10 mg/day) systemic steroid.

**Method:** A hospital based prospective study enrolling 64 eyes of 60 patients with uveitis and cataract from May 2013 to April 2014 having intraocular inflammation under control for at least 3 months preoperatively and underwent phacoemulsification with in bag placement of foldable acrylic intraocular lens (IOL).

**Results:** Twenty six male and 34 female were included with mean age of  $47.23 \pm 16.85$  SD (16-85) years. In 43.75 % of eyes the uveitis was idiopathic followed by sarcoid uveitis (18.7%), Herpetic uveitis (15.6%), Tubercular uveitis (6.2%), VKH (4.6%), HLA B 27 (4.6%), Behcet's, endogenous endophthalmitis, Wegener's granulomatosis and lepromatous uveitis (1.5% each). Anterior chamber cell count was grade 1+ in 33 eyes (51.56%) on 1st post-operative day and in 29 eyes (45.31%) on second follow up. Out of total 11 eyes (17.18%) that developed fibrin, 7 eyes were treated with sub conjunctival injection of dexamethasone with half hourly topical steroid drops. Other 4 eyes that developed fibrin responded to half hourly topical steroid. Dose of oral prednisolone increased in 6 patients in early post operative duration. At the final follow up, 50 eyes (92.58%) had improvement in best corrected visual acuity and cystoid macular edema (CME) in 5% (n=3) eyes.

**Conclusion:** Even without the use of preoperative high dose of oral steroid, inflammation was under control with significant improvement in visual acuity 3 months postoperatively.

**Key words:** Cataract, intraocular inflammation, uveitis, visual outcome

#### Introduction

Uveitis in the form of recurrent or chronic problem has to be given repeated courses or prolonged course of oral and or/systemic corticosteroid. However there are many ocular

and systemic side-effects of corticosteroid. Uveitis itself and the use of steroid causes cataract formation in uveitic eyes. The management of cataract associated with uveitis requires special precautions in order to prevent intra operative complications and postoperative inflammation (Rauz S et al, 2000; Tatsushi K et al, 2007; Ujawala et al, 2012). Preoperative protocols for uveitic cataract surgery varies in various uveitis centres worldwide. Many treat chronic uveitis cases with oral prednisolone of high to moderate dose, few days to 14 days before surgery. A stat dose of preoperative

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intravenous methylprednisolone on the day of surgery without oral steroid for quiescent anterior uveitis cases is also practised (Rauz S et al,2000; Jorge et al,2002; Elgohary et al,2007; Marie-lyne et al,2009; JagatRam et al,2010).

The aim of this study is to find out the outcome of cataract surgery in patients with uveitis without the use of prophylactic moderate to high dose of systemic steroid in the immediate preoperative period. These eyes had no inflammation or had inflammation under control with topical  $\pm$  oral steroid or immunosuppressive for at least 3 months before surgery.

### Methods

A hospital based prospective study was conducted on patients diagnosed as uveitis by uveitis specialist with visually significant cataracts at Tilganga institute of ophthalmology, within one year of study period ( May 2013 to April 2014).

**Inclusion criteria:** All the eyes of patients aged 16 years or above with anterior, anterior and intermediate or panuveitis having visually significant cataract were included in the study. All eyes had inflammation under control (Anterior chamber cells  $<1$ /HPF) for at least 3 months before surgery.

**Exclusion criteria:** Eyes with Fuch's uveitis, traumatic cataract, posterior uveitis, acute primary angle closure glaucoma and uveitis were excluded from the study. Eyes with corneal disease (dystrophy, corneal opacity) and posterior segment conditions (optic atrophy, diabetic retinopathy and ARMD) were also not included in the study.

**Pre operative protocol:** Diagnosis of uveitis was based upon thorough history, clinical examination and laboratory investigations. Visual acuity were documented as per Snellen's chart. Anterior segment examination was done using HAAG-STREIT BP: 900 slit lamp biomicroscope to assess the inflammatory status

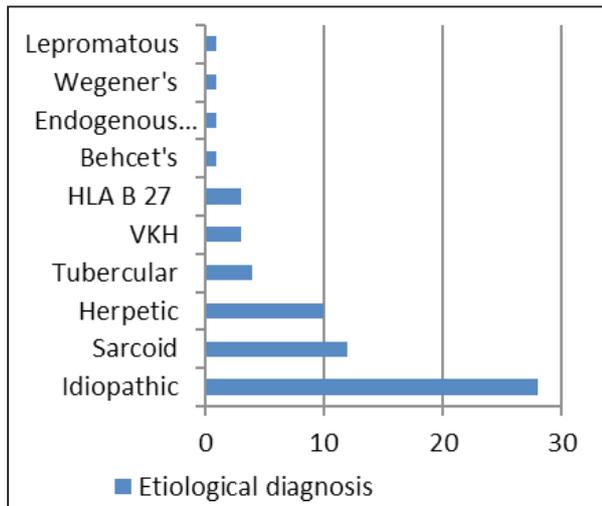
of anterior chamber. Dilatation of pupil was done to assess the posterior segment with 90D lens and 20 D lens with the help of indirect ophthalmoscope. To measure intra ocular pressure Goldmann applanation tonometry was done. The SUN working group grading scheme for anterior chamber cells and anterior chamber flare was followed (Jabs DA et al, 2005). Patients who were on maintenance dose of steroid either systemic or topical, the dose of steroid was continued. The dose of steroid was not increased preoperatively in any case. All the eyes were then subjected to phacoemulsification with acrylic IOL implantation.

**Post operative protocol:** For first week, 1 hourly topical prednisolone acetate 1% was prescribed, followed by 2 hourly for second week thereafter tapered over next 3-4 months along with cycloplegic (Homatropine) and topical antibiotics. In case of intense inflammation ( Anterior chamber cells 4+ or hypopyon or fibrin) subconjunctival injection of 2mg / 0.5ml of dexamethasone was given for 3 days along with half hourly prednisolone drops. Patients were examined on 1st postoperative day (POD), 3<sup>rd</sup> or 4<sup>th</sup> POD, 6<sup>th</sup> -8<sup>th</sup> POD, one month and three months after surgery.

Data were analyzed using the SPSS program 17.0. Statistically significant differences were determined by a paired-sample Student t test and chi square test.

### Results

Sixty-four eyes of 60 patients were included in the study. Of the 60 patients, 26 (43.33%) were male and 34 (56.66%) were female. Mean age was  $47.23 \pm 16.85$  years (16 - 85). Ten eyes lost to follow up and were not included in the final analysis. Concerning the anatomical diagnosis of uveitis, most common was anterior uveitis in 37 (57.81%) eyes, followed by anterior plus intermediate in 14( 21.87 %) eyes. Intermediate uveitis accounted for 2(3.13 %) eyes and panuveitis for 11(17.18 %) eyes. The etiological diagnosis is shown in figure 1.



**Figure 1:** Etiological Diagnosis of Uveitis

Seven eyes (10.7% ) were on preoperative maintenance dose of oral steroid (<5mg a dy), 11 eyes (17.18%) were on maintenance dose of topical steroid (once daily or less) and 4 (6.25%) eyes on immunomodulator therapy. Preoperatively 9 eyes (14.06%) had grade 1 cells and all other eyes were quite. In early postoperative follow up most of the eyes (50/64) had cells ≤ grade 1. At final follow up none of the eye had cells more than grade 1 (table 1). On the first POD 58/64 (90.62%) had ≤ grade 1 flare (table 2).

Out of total 11 eyes (17.18%) that developed fibrin on the first postoperative week, 4 eyes (36.36%) responded to half hourly topical steroid whereas 7 eyes (63.63%) with intense fibrin needed sub conjunctival 2mg / 0.5ml of dexamethasone injection for 3 days along with half hourly prednisolone drops. Five eyes did not respond to subconjunctival dexamethasone only and were augmented with oral steroid. There was recurrence of fibrin on 1 month postoperative visit in the endogenous endophthalmitis case which was treated with subconjunctival injection of dexamethasone and half hourly steroid drops. Nine out of 11 (17.18%) eyes that developed fibrin in postoperative period underwent pupil stretch. Visual acuity improved in 92.58% of eyes (n=50) after 3 months of cataract extraction and 5% (n=3) eyes developed CME.

### Discussion

The mean age of patients included in our study was  $47.23 \pm 16.85$  SD years which was similar to other studies on cataract surgery in uveitic eyes ( Rauz et al,2000; Meacock WR et al, 2004; Akova et al, 2006; Elgohary MA et al,2007; Jagat Ram et al,2010).

**Table 1:** Postoperative Anterior Chamber cells (AC- anterior chamber, f/u- follow up)

AC cells	Grade 0	Grade 0.5+	Grade 1+	Grade 2+	Grade 3+	Grade 4+
1st f/u	0	17(26.56%)	33(51.56%)	10(15.62%)	3(4.68%)	0
2nd f/u	0	27(42.18%)	29(45.31%)	5(7.81%)	3(4.68%)	0
3rd f/u	4(6.25%)	41(64.06%)	14(21.87%)	3(4.68%)	2(3.33%)	0
4th f/u	17(28.33%)	36(60.0%)	5(8.33%)	2(3.33%)	0	0
5th f/u	27(50.0%)	23(42.59%)	4(7.40%)	0	0	0

**Table 2:** Postoperative Anterior Chamber flare (AC- anterior chamber, f/u- follow up)

AC cells	Grade 0	Grade 1+	Grade 2+	Grade 3+	Grade 4+	Fibrin
1st f/u	53(82.81%)	5(7.81%)	0	0	0	6(9.37%)
2nd f/u	54(84.37%)	8(12.5%)	0	0	0	2(3.12%)
3rd f/u	54(84.37%)	4(9.37%)	1(1.56%)	0	0	3(4.68%)
4th f/u	55(93.33%)	4(6.66%)	0	0	0	1(1.56%)
5th f/u	51(94.44%)	3(5.55%)	0	0	0	0

Similar to our result, previous few studies also had most common anatomical diagnosis as the anterior uveitis ( Estafanous M et al,2001; Palanisamy & Jones,2001; Rahman & Jones,2005; Jagat Ram et al,2010). In our study in 28eyes (43.75 %) had idiopathic uveitis which was similar to other studies (Rauz S,2000; Estafanous M et al,2001; Kawaguchi T et al, 2007).

Fifty percent eyes had no cells, 42.59% had grade 0.5+ cells and only 7.4% had grade +1cells at final follow up suggesting well controlled inflammation. In our study the increased post operative inflammation was seen in total 15 (23.42%) eyes. In other studies intense intraocular inflammation occurred in 6.7% and 10% eyes postoperatively ( Rauz S, 2000; Palanisamy & Jones,2001). Severe postoperative inflammation was less than our study. But these studies included 39.53% eyes with Fuch's uveitis (Palanisamy & Jones,2001).

Hazari and Sangwan (2000) started preoperative anti inflammatory medications in only 70/106 (66%) eyes. Out of which, 23eyes (32.8%) had increased post-operative inflammation and needed additional medication. Of the 36 eyes that did not receive preoperative medications, 6 (16.6%) developed increased postoperative inflammation suggesting that administration of additional preoperative anti-inflammatory medications did not have a significant effect on postoperative inflammation.

Presence of synechiae pre-operatively were associated with an increased likelihood of developing postoperative inflammation within 3 months of surgery (Elgohary MA,2007). In our study, nine out of 11( 17.18%) eyes that developed fibrin in postoperative period had undergone pupil stretch followed by phacoemulsification. Thus as compared to other studies, the rate of increased postoperative inflammation was definitely higher in our study. However we were able to control it effectively

with only repeated doses of subconjunctival injections of dexamethasone in all 17.18% cases and oral steroid in only 9.36% cases. So as compared to other papers where all or majority of cases received increased dose of oral steroid postoperatively, only 9.36% of our patients needed it.

In our study the visual acuity improved in 92.58%. This is in agreement with other studies that reported visual improvement of >2 lines in up to 80% of patients (Palanisamy & Jones,2001; Rahman & Jones,2005; Gonzalez- Guizar JJ,2012). In Elgohary M A et al (2007) study, 71.3% eyes had  $\geq 2$  snellen's line improvement in vision. In 87% eyes  $\geq 2$  snellen's line improvement in vision was seen (Palanisamy & Jones,2001). So the visual outcome in our patients is comparable with the studies where systemic steroid was given in immediate pre-operative or per operative period.

Post operatively, CME was detected in 5%(n=3) eyes. Our result is comparable to those of Alio J (2002) and Kawaguchi (2007), 7.14% and 6.1% respectively. Looking at the results of various papers, the rate of post operative CME ranged from 2.32% upto 50% (Palanisamy & Jones,2001; Alio JL et al,2002; Meacock WR et al,2004; Elgohary MA et al,2007; Kawaguchi T et al,2007; Jagat Ram et al,2010). The low rate of postoperative CME (2.32%) in Palanisamy's (2001) study could be because of the fact that 39.5 % of study cases were of FHI. The low rate of postoperative CME in our study could be because of good pre and postoperative inflammatory control, but also could be because of short follow up period of 3 month. Only one (1.5%) case had raised IOP on the first postoperative day. In the literature review, Jagat Ram (2010) reported in 4.63% cases and Elgohary M A (2007) reported in 5.9%.

PCO was seen in 3 (6.25%) cases which is very less than reported in related articles in

the past. It ranged from 14.9% upto 62% cases (Palanisamy & Jones,2001; Alio JL et al,2002; Meacock W R et al,2004;Elgohary M A et al,2007; Kawaguchi T et al, 2007;Jagat Ram et al, 2010). The reason for the very low PCO rate in this study could be due to short postoperative follow up period as compared to that of other studies.

In conclusion, this study prospectively demonstrates that with careful pre-operative inflammation control and diligent surgical technique, the postoperative inflammation can be under control without augmented pre operative dose of steroid in contrast most of the previous studies which were retrospective and used augmented dose of steroid. Despite the development of intense inflammation postoperatively, control can be achieved with periocular and systemic steroid as and when needed.

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