Uncomplicated Phacoemulsification Surgery In Complicated Cataract Due To Uveitis - Visual Recovery And Adverse Outcomes

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I Introduction

Cataract is a well established complication of Uveitis which is an important cause of ocular morbidity and blindness. Complicated cataract in uveitis occurs as a result of several factors which include severity, chronicity and location of the inflammation, the presence of synaechiae and prolonged use of corticosteroids. Cataract surgery is essential for restoration of vision. However cataract surgery in uveitis is challenging and often associated with vision threatening complications. Phacoemulsification is now a universally accepted surgery for uncomplicated cataracts. But complicated cataract presents a special and challenging setting for performance of phacoemulsification surgery demanding special skill and expertise. This study aims to evaluate the efficacy of phacoemulsification surgery in effecting visual recovery and minimising adverse outcomes in complicated cataracts due to uveitis.

II Materials And Methods

34 eyes with complicated cataract due to uveitis requiring surgery were included in this study. This was a prospective study. Informed consent was taken from all participants. Complete preoperative ophthalmic and systemic evaluation was done. Pupils in six eyes did not dilate due to almost 360° posterior synechiae. 11 eyes had posterior synaechiae in one to two quadrants. Grades of cataracts varied between grade two to three. Meticulous phacoemulsification surgery was performed. Foldable single piece hydrophobic acrylic posterior chamber intra ocular lens (PC IOL) with square edge optic was implanted in all eyes. Post operative follow up was done at periodic intervals. Visual Acuity and development of any postoperative complications like reactivation of uveitis, IOL deposits, posterior capsular opacification and anterior capsular fibrosis, IOL decentration and cystoid macular oedema were recorded. Optical coherence tomography Fundus Fluorescin Angiography was done to confirm cystoid macular oedema.

Results. 34 eyes with complicated cataracts were included in this study. This included 19 males and 15 females. The mean age was 49.55 yrs. The mean postoperative follow up was 7.58 mths, 28 eyes (82.35%) achieved a visual acuity of 6/6. One eye did not improve beyond 6/24 due to pre-existing macular pathology. Five eyes had final visual acuity between 6/9 to 6/18, four of which improved to 6/6 after YAG laser posterior capsulotomy. Very significantly posterior capsular opacification was seen in six eyes (17.64%) cystoid macular oedema in two eyes (5.88%), reactivation of uveitis in five eyes (14.70%), IOL deposits in four eyes (11.76%) and anterior capsular fibrosis in one eye (2.94%).

Conclusions. Phacoemulsification is a safe and effective procedure in high risk uveitic eyes with complicated cataract leading to good visual recovery in most cases.

Abstract

Aim: To evaluate the efficacy of phacoemulsification surgery in effecting visual recovery and minimising adverse outcomes in complicated cataracts due to uveitis.

Materials and Methods. 34 eyes with complicated cataract due to uveitis were included in this study. Complete preoperative ophthalmic and systemic evaluation was done. Meticulous phacoemulsification surgery was performed. Foldable single piece hydrophobic acrylic PC IOL with square edge optic was implanted in all eyes. Post operative follow up was done at periodic intervals. Visual Acuity and development of any postoperative complications like reactivation of uveitis, IOL deposits, posterior capsular opacification and anterior capsular fibrosis, IOL decentration and cystoid macular oedema were recorded. Optical coherence tomography Fundus Fluorescin Angiography was done to confirm cystoid macular oedema.
decentration and cystoid macular oedema were recorded. Optical coherence tomography (OCT) was done postoperatively to confirm presence of cystoid macular oedema. Patients with any other ocular or systemic disease were excluded.

**Pre-operative management.** All patients received oral Prednisolone 1 mg/kg given three days prior to surgery. Periocular posterior subtenon injection of triamcinolone acetonide (20mg in 0.5ml) was administered to all eyes three days prior to surgery.

**Surgical Management.** Meticulous phacoemulsification was performed under peribulbar anaesthesia through a clear corneal incision. Flexible self retaining iris hooks were used in cases with 360 degree posterior synechiae. Synechiotomy with iris repositor was done in eyes with posterior synechiae in one or two quadrants large capsulorrhesis was made. Nucleus was managed using stop and chop/direct chop techniques. Bimanual irrigation was carried out. Good cortical clean up with capsule polishing was done. Endcapsular IOL implantation was done in all cases to prevent iris-lens touch.

**Postoperative Management.** All patients were treated with frequent topical 1% Prednisolone acetate eye drops and oral steroids which were gradually tapered off in addition to routine management consisting of topical cycloplegics, NSAIDS and nonselective beta blockers.

Patients were reviewed on day 1, day 3, 3 weeks, 3 months, 6 months and 1 year. Various findings were recorded. All the patients had a minimum follow up of 6 months.

### III Results

34 eyes of 34 patients of complicated cataract were included in this study. This included 19 males and 15 females (Table 1). The mean age was 49.55 years (Table 2). Preoperative visual acuity and type of uveitis is tabulated in Table 3 and 4. The mean postoperative follow up was 7.58 month. 28 eyes (82.35%) achieved a visual acuity of 6/6. Five eyes (14.70%) had final visual acuity between 6/9 to 6/18, four of which improved to 6/6 after YAG laser posterior capsulotomy. One eye did not improve beyond 6/24 (Table 5). Visually significant posterior capsular opacification was seen in six eyes (17.64%), Cystoid macular oedema in two eyes (5.88%), reactivation of uveitis in five eyes (14.70%), IOL deposits in four eyes (11.76%) and Anterior capsular fibrosis in one eye (2.94%) (Table 6).

### IV Discussion

Complicated cataract due to uveitis is a challenging situation for any cataract surgeon. Surgery is difficult be it Extracapsular cataract extraction (ECCE) or phacoemulsification due to presence of posterior synechiae, nondiilling pupil, white cataract and invisible anterior capsule, weak zonules and corneal haze due to past uveitis. Type and site of IOL implantation is another matter of debate. Surgery in such eyes often leads to reactivation of severe uveitis. In recent years several studies have shown that strict preoperative, intraoperative and postoperative control of inflammation coupled with meticulous surgical methods and excellent IOL biomaterials allow a safe surgery in most of these eyes.

In our study all 34 eyes of 34 patients underwent an uneventful phacoemulsification surgery. Foldable single piece hydrophobic acrylic posterior chamber intra ocular lens (PC IOL) with square edge optic was implanted in all eyes. 28 eyes (82.35%) regained a visual acuity of 6/6, five eyes (14.70%) had a vision between 6/9 to 6/18 due to a development of posterior capsular opacification, four eyes improved to 6/6 following a YAG laser posterior capsulotomy. So all eyes except two (94%) had a complete visual recovery [Table 5]. One eye did not improve beyond 6/24 due to preexisting cystoid macular oedema (CME) due to uveitis. One eye improved only upto 6/12 due to development of CME. The findings are in conformity with the findings of Alio JL, Chipont E, Ben Ezra & Fakhry, who compared the performance of intraocular lenses in eyes with complicated cataract due to uveitis and found that acrylic IOLs provided a better visual outcome as compared to rigid PMMA IOLS. Chiu H, Dang H et al also concluded that cataract surgery with acrylic posterior-chamber IOL implantation is effective at improving visual acuity in patients with uveitis. Visually significant posterior capsular opacification (PCO) was seen in six eyes (17.64%) PCO occurs as a result of proliferation of residual lens epithelial cells on to the posterior capsule. It is the commonest cause of postoperative visual impairment after uncomplicated cataract surgery. Incidence of PCO is even higher in uveitic eyes. Elghohary, MA, McCluskey PJ et al [13] reported PCO in 38.6 % which they attributed to use of hydrogels and silicon IOLs in their study. The severity of postoperative inflammation is directly related to the tissue handling which is more in ECCE and this in turn is directly related to PCO. Abela-Formanek C, Aman M, Schaarscherger also [6,7,8] reveal that PCO rate in inflamed eyes is more than normal eyes. Their study also reveals that sharp edged acrylic optics with an overlapping CCC had lower PCO rates.

Cystoid Macular Edema was seen in two eyes (5.88%) These two eyes had panuveitis. The sample size being too less the statistical correlation could not be carried out. However CME is a known complication of surgery even in eyes without any past history of uveitis or intraocular inflammation. Quentin et al [9] reported incidence of CME in 22% of intracapsular cataract extraction (ICCE) and 12% of ECCE at six months. Uveitic eyes have a higher incidence of CME.

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Cataract research outcome team\textsuperscript{12} [10] declared that incidence of CME did not differ in ECCE and phacoemulsification in uncomplicated cataracts. But our study shows that Phacoemulsification in complicated cataracts has a lesser incidence of CME. Suresh and Jones\textsuperscript{13} [15] also reported a lower prevalence of macular oedema (2\%) during an average follow-up of 24.1 months after Phacoemulsification surgery.

Reactivation of uveitis occurred in five eyes (14.7\%). Reactivation of uveitis occurs in all cases of uveitis undergoing surgery as a result of tissue handling and due to the natural course of the disease. Theoretically Phacoemulsification involves minimal tissue handling and uveitis should be less which has been observed in this study. It has been documented by Rossa V, Sundmacher R, Willers R\textsuperscript{14} [11] that operative method is not associated with increased risk of uveitis. A strict preop and postop control of inflammation is a must. Chee and colleagues\textsuperscript{5} compared the two methods of ECCE and Phacoemulsification in uveitis eyes and found that the Phacoemulsification eyes invariably had less inflammation.

Early rise of IOP was seen in two eyes (5.88\%) in our study which was comparable with findings of Elgohary. MA., McCluskey PJ et al\textsuperscript{16} who reported incidence of 5.9 \%.

IOL deposits were seen in four eyes (11.76\%). Abela-Formanek C, Amon M, Schild G etal\textsuperscript{9}, have found that hydrophobic acrylic material had lower uveal but better capsular biocompatibility.

Anterior capsular fibrosis was seen in one eye (2.94\%). It is a known condition in uveitis. Abela Formanek C Amon M\textsuperscript{8,9} have found in their studies that Anterior capsular opacification is higher in uveitic eyes irrespective of the lens biomaterial used.

V Conclusion
Phacoemulsification surgery has the advantage of a small incision, minimal breakdown of blood aqueous barrier, closed chamber surgery and a shorter surgical time. It is a safe and effective technique for tackling complicated cataract, due to uveitis with good postoperative visual outcome and results.

References

\begin{table*}
\centering
\caption{AGE DISTRIBUTION}
\begin{tabular}{|c|c|c|}
\hline
SER NO & AGE GROUP(YRS) & NO OF PATIENTS \\
\hline
1 & 1 & 34 \\
\hline
\end{tabular}
\label{table:age_distribution}
\end{table*}

\begin{table*}
\centering
\caption{SEX DISTRIBUTION}
\begin{tabular}{|c|c|}
\hline
SEX & NO \ \\
\hline
MALES & 19 \\
FEMALES & 15 \\
\hline
TOTAL & 34 \\
\hline
\end{tabular}
\label{table:sex_distribution}
\end{table*}

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Uncomplicated Phacoemulsification Surgery In Complicated Cataract Due

TABLE-3

<table>
<thead>
<tr>
<th>TYPES OF UVEITIS</th>
<th>No of cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Healed Anterior uveitis</td>
<td>14</td>
<td>41.17</td>
</tr>
<tr>
<td>2. Fuchs Hetero chromic cyclitis</td>
<td>3</td>
<td>8.82</td>
</tr>
<tr>
<td>3. Intermediate uveitis</td>
<td>11</td>
<td>32.35</td>
</tr>
<tr>
<td>4. Intermediate uveitis with spill over Anterior uveitis</td>
<td>2</td>
<td>5.88</td>
</tr>
<tr>
<td>5. Pan uveitis</td>
<td>3</td>
<td>8.82</td>
</tr>
<tr>
<td>6. Multifocal choroiditis</td>
<td>1</td>
<td>2.94</td>
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TABLE-4

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<th>PREOPERATIVE VISUAL ACUITY</th>
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<tr>
<td>6/60</td>
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<td>6/36</td>
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<tr>
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TABLE-5

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<tr>
<td>VISUAL ACUITY</td>
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<td>---------------</td>
</tr>
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<td>6/6</td>
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<tr>
<td>6/9 -6/18</td>
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<td>6/24</td>
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TABLE-6

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<th>POST OPERATIVE FINDINGS</th>
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<tbody>
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<td>SER NO</td>
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<tr>
<td>---------</td>
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