Surgical Treatment, Clinical Outcomes, and Complications of Traumatic Cataract: Retrospective Study

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Aim. To analyze clinical outcomes and complications after traumatic cataract extractions because of post-traumatic lens opacification.

Methods. We performed a retrospective analysis of 24 eyes with traumatic cataract surgically treated between May 2000 and June 2003. Preoperative visual acuity, postoperative best corrected visual acuity, and preoperative, intraoperative, and postoperative complications were analyzed for all eyes.

Results. Most patients were young men, with preoperative visual acuity of 0.05-0.1, who underwent surgery between one and six months after the trauma. We found corneal scar in 5 eyes, rupture of the anterior capsule in 4 eyes, sphincter damage in 2 eyes, anterior synechiae in 3 eyes, iridodialysis in one eye, zonular loss in one eye, and macular scar in one eye. Mild or moderate postoperative complications occurred in 9 out of 24 cases. Visual acuity improved in 17 eyes. Seven out of 24 patients did not benefit from cataract surgery because of traumatic involvement of the retina and opacification of posterior capsule.

Conclusion. The majority of the eyes with traumatic cataract were safely rehabilitated with intraocular lens implantation.

Key words: cataract; cataract extraction; intraoperative complications; lens cortex, crystalline; lens implantation, intraocular; phacoemulsification

Cataract may be an early or late manifestation of ocular trauma. The two basic types of trauma-related lens abnormality are loss of transparency and loss of position. They may be combined and complicated by lens fragmentation or swelling. Traumatic cataract can be caused by nonmechanical (1,2), or mechanical factors (3,4).

There are two basic questions concerning the surgery of traumatic cataract: should primary or secondary cataract removal be performed and what is the most proper technique if the intervention is decided. The greatest benefit of primary cataract removal is the surgeon’s ability to inspect the posterior segment otherwise blocked by lens opacity. In general, primary cataract removal is recommended if the lens is fragmented, swollen, or causing a pupillary block (5).

Advantages of secondary cataract removal are better visibility, better intraocular lens calculation, anterior segment reconstruction, and stabilization of a hemato-ocular barrier (5).

We retrospectively evaluated surgical treatment, clinical outcomes, and complications in 24 cases with a secondary extraction of a traumatic cataract.
methacrylate [PMMA]; IOL Allergan PMMA 59, Irvine, CA, USA or AcrySof MA 60 BM IOL, Alcon, Forth Worth, TX, USA). We performed anterior vitrectomy with an Alcon Universal II (Alcon) in two cases with intraoperative posterior capsular rupture. Anterior vitrectomy was not performed in only one case. All patients received Dexamethasone (Krka, Novo mesto, Slovenia) subconjunctivally and Maxitrol (Alcon) ointment at the end of the procedure.

Follow Up
Topical Maxitrol solution was prescribed 5 times a day postoperatively with a gradual tapering, depending on the level of intraocular inflammation. All patients were followed daily for the first 5 days after the surgery, once a week for the first month after the procedure, and at monthly intervals for at least 12 months.

Outcome Measures
Visual acuity was recorded at each visit, slit-lamp biomicroscopic and posterior segment examination were done to record early postoperative complications (corneal edema, fibrinous anterior uveitis (11), raised intraocular pressure, hyphema) and late postoperative complications (posterior capsule opacification, pupil capture, intraocular lens decentration, and retinal detachment). Analysis was performed to compare the visual results, preoperative and postoperative complications.

Results
Preoperative Complications and Best Corrected Visual Acuity
Preoperative visual acuity ranged from light projection to 0.0125 in 12 patients and from 0.05 to 0.1 in other 12 patients. We encountered the following preoperative complications (Table 1): corneal scar because of a previous large corneal laceration, anterior capsular rupture, anterior synechiae, sphincter damage, iridodialysis, zonule loss, vitreal hemorrhage, and macular scar.

Intraoperative Complications
Posterior capsular rupture, which was managed with vitrectomy, occurred in 2 cases. In a single case, vitrectomy was not performed after capsular rupture. Iris sutures were placed in 2 cases due to intraoperative sphincter rupture. Intraoperative hyphema was encountered in a single case (Table 1).

Postoperative Complications and Best Corrected Visual Acuity
Early postoperative complications were corneal edema, fibrinous uveitis, intraocular pressure rise, and hyphema. Late postoperative complications were posterior capsule opacification, pupil capture (Fig. 2), intraocular lens decentration, and retinal detachment (Table 1).

Postoperative best corrected visual acuity ranged from 0.05 to 0.1 in 8 patients, and from 0.15 to 0.9 in 16 patients. Visual acuity in the first group could not be improved beyond 0.05-0.1 because of corneal scar and postoperative complications such as posterior capsule opacification, intraocular lens decentration, pupil capture, and retinal detachment in one case.

Corneal edema, intraocular pressure increase, and hyphema were transient requiring a short course of topical medical treatment. The most frequent early complication was fibrinous uveitis, which developed in 5 cases. Three children required intensive topical corticosteroid therapy in the immediate postoperative period. The most frequent late postoperative complication was posterior capsule opacification requiring an Nd:YAG laser posterior capsulotomy.

Discussion
Traumatic cataract in children (6) and adults is a common cause of unilateral visual loss, especially after penetrating injuries. In our study, only 4 patients were older than 30 years and majority were men. Bowman at al (8) reported similar findings regarding patient age.

Injuries of the eye occur mostly during children play (6) or in sport-related activities. Injuries are also often caused by a knife, toys, glass, bungee cord, wire, stick, pencil, or firecrackers (6).

Cataract surgery with intraocular lens implantation was performed 1-6 months after a primary repair of corneal or scleral wound following complete eval-

Table 1. Preoperative, intraoperative, and postoperative complications in 24 patients undergoing surgery for traumatic cataract

<table>
<thead>
<tr>
<th>Complications</th>
<th>No. of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative:</td>
<td></td>
</tr>
<tr>
<td>corneal scar</td>
<td>5</td>
</tr>
<tr>
<td>anterior capsule rupture</td>
<td>3</td>
</tr>
<tr>
<td>anterior synechiae</td>
<td>3</td>
</tr>
<tr>
<td>sphincter damage</td>
<td>2</td>
</tr>
<tr>
<td>iridodialysis</td>
<td>1</td>
</tr>
<tr>
<td>zonule loss</td>
<td>1</td>
</tr>
<tr>
<td>vitreous hemorrhage</td>
<td>1</td>
</tr>
<tr>
<td>macular scar</td>
<td>1</td>
</tr>
<tr>
<td>Intraoperative:</td>
<td></td>
</tr>
<tr>
<td>posterior capsule rupture</td>
<td>3</td>
</tr>
<tr>
<td>iris sutures</td>
<td>2</td>
</tr>
<tr>
<td>hyphema</td>
<td>1</td>
</tr>
<tr>
<td>Postoperative:</td>
<td></td>
</tr>
<tr>
<td>corneal edema</td>
<td>2</td>
</tr>
<tr>
<td>fibrinous uveitis</td>
<td>5</td>
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<tr>
<td>raised intraocular pressure</td>
<td>1</td>
</tr>
<tr>
<td>hyphema</td>
<td>1</td>
</tr>
<tr>
<td>posterior capsule opacification</td>
<td>4</td>
</tr>
<tr>
<td>pupil capture</td>
<td>1</td>
</tr>
<tr>
<td>decentration of intraocular lens</td>
<td>3</td>
</tr>
<tr>
<td>retinal detachment</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 1. Total traumatic cataract (arrow) with a large corneal scar.
vation of the damage to the intraocular structures by ancillary methods, such as B-scan ultrasonography (9). Advantages of the secondary procedure are better visibility, better intraocular lens calculation, anterior segment reconstruction and, what is of great importance, stabilization of hemato-ocular barrier. Intraocular lens power calculation in an eye with a corneal laceration was performed on a fellow non-injured eye, because the mean central corneal power in the injured eyes was not different from that in the contralateral normal eyes (12). We performed two types of surgeries; extracapsular cataract extraction and phacoemulsification with implantation of intraocular lens in 22 cases. In 2 cases with intraoperative posterior capsular rupture, anterior vitrectomy was performed without intraocular lens implantation. Two types of intraocular lenses were implanted: PMMA and acrylic. Trivedi and al (13) reported good results with the implantation of acrylic intraocular lens.

Our study demonstrated that a majority of eyes with traumatic cataract could be safely rehabilitated with posterior chamber lens implantation. Postoperative best corrected visual acuity improved in 17 cases. In 7 cases, visual acuity could not improve beyond 0.1 because of postoperative complications. Blum at al (14) reported improved visual acuity in 90% of the cases, whereas Gain at al (15) concluded that postoperative visual acuity depended on complications. Gupta at al (16) also had good results in children with traumatic cataracts, who achieved visual acuity of 0.5 or better after the operation and intraocular lens implantation.

Fibrinous uveitis is a common early postoperative complication in children, leading to posterior central synechias, pupillary block glaucoma, and lentilucular membrane formation (11,16). To avoid these complications, patients received an intensive topical corticosteroid therapy in the immediate postoperative period, which was gradually tapered over 3-4 month period (17). Patients were examined frequently during the early postoperative period.

The most frequent late postoperative complication in our study was posterior capsule opacification, mainly in children, requiring and Nd: YAG laser posterior capsulotomy. The incidence of posterior capsule opacification in children with traumatic cataract having cataract surgery with posterior chamber intraocular lens implantation has been reported to vary between 21% and 100% (18-21).

One case with retinal detachment required pars plana vitrectomy. After a five month follow-up, the retina was attached and visual acuity was 0.1.

In conclusion, the operation of traumatic cataract is a very demanding and delicate procedure. We reviewed clinical outcomes and complications in patients with a secondary extraction of a traumatic cataract. The majority of published papers reviewed their results and complications in patients with a primary extraction of a traumatic cataract. Many factors such as age, concomitant eye injury, intraocular lens implantation, preoperative, intraoperative, and postoperative complications, and the skill and experience of the surgeon are responsible for successful postoperative results.

References


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