

VISUAL OUTCOME OF TRAUMATIC CATARACT SURGERY IN IBADAN, NIGERIA

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ABSTRACT

Objective: To review the visual outcome of traumatic cataracts operated at the University College Hospital, Ibadan with the view to making recommendations for improved outcome.

Methods: All patients operated at the University College Hospital Ibadan, Nigeria between May 1999 and April 2004 with traumatic cataract were reviewed retrospectively to determine visual outcome and main causes of poor visual outcome <6/18, using a structured data entry form and information obtained from the operation register and case notes of patients

Results: 32 patients, age range 2 to 71 years, mean age 25.6 ± SD 16.1 years were reviewed. 22 (68.8%) were males while 10 (31.2%) were females. Causes of traumatic cataract included wood /stick splinters in 7 (21.9%), cane/ whiplash injury 6 (18.8%), and propelled missile injuries, 5 (15.6%). Less important cause of injuries were gun shot, road traffic accident and fist injuries. 11 (35.6%) of the patients had best corrected post operative visual acuity of >6/18, 10 (32.2%) < 6/18-3/60, while 32.2% of the cases reviewed remained blind or had vision <3/60 in the affected eye. Cause of poor post operative visual acuity (less than 6/18) in 64.4% of the subjects included cornea opacity 12.5%, posterior capsule opacity 12.5%, retinal detachment 9.4%, and glaucoma 6.9%

Conclusion: Useful vision can be restored in a proportion of traumatic cataracts through surgery, although sight-limiting complications, which may be related to the severity of the trauma or prolonged post op inflammation may be present, many are potentially treatable with further intervention. The need for adequate health education to prevent ocular injuries and preoperative diagnosis of associated posterior segment complications that may prevent optimal post-operative visual acuity is also noted.

Key Words: Traumatic Cataract, Cataract Outcome, Cataract Surgery, Cornea Opacity. (Accepted 15 Oct. 2007)

INTRODUCTION

Cataract is the commonest cause of blindness and majority of the clinical types are age related cataract. About 75% of persons older than 75 years have lens opacities¹. Cataract can also develop secondary to blunt or penetrating ocular injury and these have specific morphologic appearances². Trauma (penetrating or blunt) is the commonest cause of unioocular cataract in young individuals³. Less common causes of traumatic cataract are ionising, infrared, ultraviolet irradiation and electric shock³. The final visual outcome after traumatic cataract surgery is determined by a number of factors, including severity of the predisposing trauma with the possibility of association with other eye injuries, infection, as well as surgery related complications⁴. Greven et al⁵ found that only 30% of eyes that suffered from contusion injuries had normal pre-operative posterior segment thus making a B-scan necessary if the posterior pole cannot be visualised

Traumatic cataract may occur in association with Various injury-related complications such as cystoid macular oedema, retinal detachment and glaucoma, which may influence the final visual outcome after surgery⁶.

A review of 15 patients who had traumatic cataract extraction in Germany revealed that only 53% of the subjects had post-operative vision of 6/12 or better. Reason for poor outcome included accompanying macular pathology, central cornea opacities, posterior capsule opacity and retinal detachment.¹¹ Thus patients with traumatic cataracts constitute a special group that require additional care during surgery for optimum results.

To the best of our knowledge no review has specifically looked at outcome of traumatic cataract surgery in Nigeria. The aim of this study was therefore to examine cases of traumatic cataracts operated at the University College Hospital, Ibadan during the period under review with the aim of making recommendations for improvement in future management especially in developing countries where facilities are not always available.

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MATERIALS AND METHODS

Case notes of 32 patients with the diagnosis of traumatic cataracts, who had cataract extraction during a 5-year period, May 1999-April 2004 were identified retrospectively from the operating theatre register of the department of Ophthalmology, University College Hospital, Ibadan. Information collected and reviewed included age, sex, eye affected, nature and duration of injury before surgery, other associated ocular injuries and complications, type of surgery, best corrected visual acuity and possible causes of poor visual outcome. Optic nerve and retinal functions of the patients were inferred from response to pupillary reaction to light and light projection test respectively. Slit lamp examination was done to determine corneal integrity as well as examination for evidence of previous trauma. Intra-ocular pressure measurement was done with Goldman applanation tonometer. Ultrasound scan was done for all cases. No biometric studies were done because the equipment was not available. Patients were admitted two to three days before the operation and were commenced on topical antibiotic Chloramphenicol or gentamycin, oral diazepam 5mg at night. On Morning of operation, the eyelashes were trimmed, 250mg acetazolamide tablet was given, the pupil was dilated with phenylephrine and topical tropicamide (phenylephrine was omitted in hypertensives). (Cases that failed to dilate due to synechia had synechiolysis done intra-operatively). Pre-medication was omitted and local anaesthesia was used for all cases except for Children less than 15 years of age (they had general anaesthesia) and consisted of peribulbar injection of 3-4ml 2% xylocaine with adrenaline 1:100,000 without hyalase as well as facial anesthesia using O'Brien method. Ocular massage was done as gently as possible for between 5-10 minutes to ensure a soft eye before surgery or omitted if the anterior capsule was bridged or vitreous in anterior chamber. The surgical technique for ECCE with or without IOL is as described in a previous publication⁷, synechiolysis where present was done with the aid of 2% methyl cellulose viscoelastic or the tip of the viscoelastic canular. Majority of the IOLs were from Aurolab, the rest were from Fred Hollows. They were mostly single piece polymethyl methacrylate lenses. Power of IOL was determined from the patients' refraction in the operated eye before the development of cataract or from the refraction of the other eye. IOLs used ranged from +19 to +22 diopters. The incision was closed with five 8-0 virgin silk sutures or 9-0 nylon. The wound was covered with conjunctival flap with or without suturing. Subconjunctival gentamycin 20mg, and methylprednisolone 20mg, were given, topical antibiotic was instilled and the eye was padded overnight. Post-

operative examination included daily slit lamp examination, intra-ocular pressure measurements and visual acuity using Snellens chart with and without pinhole. Patients were discharged as from the third postoperative day on topical dexamethasone steroid drops 2-6 hourly, antibiotic and tropicamide. Initial follow up was at two weeks. Subsequent visits were at 3 weeks intervals. Refraction was done after 8 weeks of surgery. Follow up was for between 6 months to 5 years.

RESULTS

A total of 32 eyes of 32 patients were reviewed. Age ranged from 2 years to 71 years, mean 25.6 years. There were 22 males and 10 females (ratio 2.2:1). Figure 1 shows the age distribution of the studied subjects. The causes of trauma amongst subjects included wood /stick in 7 (21.9%), cane/ whiplash injury 6(18.8%), and propelled missile injuries, 5(15.6%). Majority (75%) of the injuries to the eye were blunt, other details are as shown in Table 1. There was equal distribution of between the right and left eyes amongst the subjects affected.

Other complications related to the preceding ocular trauma observed at time of surgery included cornea scar in 7, glaucoma 4, lens capsule rupture 4, subluxated lens 4 and iris damage in 2 subjects. 17 of the 32 patients (53.1%) had ECCE+ PCIOL, 10(31.3%) had ECCE alone and 4 (12.5%) had ICCE using vectis extraction without lens implantation. Indication for vectis extraction was subluxated cataract with vitreous in anterior chamber while ECCE with out IOL was done due to rupture in posterior capsule not allowing a posterior chamber lens insertion. Duration of post-operative inflammation ranged from 4 weeks to 20 weeks (mean 7.1 weeks). 12 (35.6%) of the patients had best corrected visual acuity of >6/18, 32.2% > 6/18-3/60, while 32.2% of the cases reviewed remained blind in the affected eye three months after surgery by WHO criteria. The cause of poor visual acuity (less than 6/18) in the subjects included cornea opacity 12.5%, posterior capsule opacity 12.5%, retinal detachment 9.4%, and glaucoma 6.9% other details are as shown in Table 2.

Fifty percent of subjects who had cataract surgery within 6 weeks of injury compared to 30% of those who had surgery after 6 weeks had post op visual acuity better than 6/18, the difference was however not statistically significant ($P>0.05$). Vision was also better amongst those who had ECCE-IOL compared to the others (52.9% of ECCE-IOL, 20% of ECCE with out IOL and 0% of subjects who had vectis extraction had post op vision better than 6/18). This difference was statistically significant ($P<0.05$).

Figure 1: Age Distribution of Subjects with Traumatic Cataract

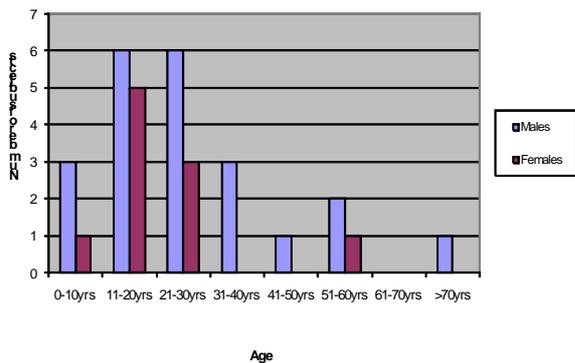


Table 1: Causes of 32 Traumatic Cataracts

Causes	Number of case	percent
Wood/stick	7	21.9
Cane/whip	6	18.8
Missiles	5	15.6
Gun shot	2	6.3
Road traffic accident	2	6.3
Fist	2	6.3
Cupboard/door	2	6.3
Scissors	1	3.1
Nail	2	6.3
Chisel	1	3.1
Uncertain	2	6.3
Total	32	100

Missiles: football 2, stone 3

Table 2: Cause of Poor Post-Op Visual Outcome (<6/18) of Traumatic Cataracts

Cause of poor vision	No	%
Cornea opacity	4	12.5
Posterior capsule opacity	4	12.5
Retina detachment	3	9.4
Glaucoma	2	6.9
Phthisis	1	3.1
Macular scar	1	3.1
Undetermined	3	9.4
Total	18	56.3

DISCUSSION

This study observed like similar studies⁸ that majority of the subjects involved are young males who are more prone to physical activity than females. 21.9% of the injuries were associated with children playing with sharp sticks while 18.8% were associated with accidental whipping of the eye while the subject was being disciplined by the guardian or teacher at school, both sources of injuries could have

been prevented with adequate health education and supervision of young people at play or greater caution when children are being disciplined. Unfortunately, less than satisfactory visual outcome (less than 6/18) occurred in 64.4% of the subjects following cataract surgery due to associated complications of ocular trauma. Late complications were similarly reported in 64.3% of patients by a study on 60 traumatic cataract cases in Poland⁹. 7 out of 24 cases of traumatic cataract also did not benefit fully from cataract surgery in a study in Croatia¹⁰ because of traumatic involvement of retina and posterior capsule opacity. However, a review of 15 patients who had traumatic cataract extraction in Germany¹¹ revealed that 53% of the subjects had post-operative vision of 6/12 or better. Reason for poor outcome included accompanying macular pathology, central cornea opacities, posterior capsule opacity and retinal detachment. Use of additional intervention procedures such as YAG laser capsulotomy, pars plana vitrectomy/ retina detachment surgery and penetrating kerato plasty was responsible for improvement in final visual outcome of 6/24 in 80% of their subjects.

Corneal and posterior capsule opacities were responsible for poor visual acuity <6/18 in 8 out of 20 subjects in this study, this implies that further intervention with penetrating keratoplasty and laser capsulotomy would markedly increase the number of subjects with quality vision. 7 out of the remaining 12 patients with vision <6/18 had serious posterior segment complications such as retina detachment, macular scar, phthisis bulbi, and glaucoma and these were mostly related to the severity of the ocular trauma (road traffic accident, gunshot, fist, football, and stick injuries), or effect of prolonged inflammation post operatively. In contrast cataract unrelated to ocular pathology is usually less associated with such vision threatening complications and therefore have better visual outcome they can therefore be treated by routine surgical procedures and may not require any special precaution required as in the case of traumatic cataract unless indicated. Yorston and Foster¹² in their review of 461 cases of age related cataracts who had extracapsular cataract surgery found best corrected vision of $\geq 6/18$ to be present in 94.3 of the subjects, posterior capsule opacity was only present in 0.9% of the subjects.

Posterior capsule opacity is a common complication following traumatic as well as uveitic cataract operations. It was present in 22% of 50 traumatic cataract operations by Ahmad et al.¹³ It was however present in 11.1% of the subjects in this review. Postoperative uveitis may also be troublesome following cataract surgery for uveitis as well as for traumatic cataracts and Hooper¹⁴ et al recommended

the preoperative control of inflammation for at least 8 weeks for a more favourable outcome in uveitic cataract. Very severe postoperative inflammation was not documented in this review but prolonged/relapse of uveitis was observed in some cases and lasted up to 20 weeks in one of the cases in this study. Presence of retinal detachment in 6.9% of the subjects may also have been related to Postoperative inflammation since retinal detachment was ruled out pre op in these patients. Postoperative inflammation was controlled with topical steroids, perhaps a more generous use would have been more helpful.

In conclusion, this study shows that majority of traumatic cataract could have been prevented. Most had their vision improved with over 35% of all cases reviewed having post operative VA of $\geq 6/18$ and although sight limiting complications were common, they were mostly related to the severity of the trauma, post op inflammation and many are potentially treatable with further intervention. Although it is not clear why a large percentage of the patients developed retinal detachment post op, inflammation may have played a significant role, we therefore advocate surgery with intra ocular lens implant for cataracts resulting from trauma. A follow up randomised study on effect of a more generous use of steroids in traumatic cataracts is proposed. There is also need for good case selection through adequate preoperative diagnosis of associated posterior segment complications that may prevent optimal post-operative visual acuity in all cases of traumatic cataract.

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