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VISUAL OUTCOME OF TRAUMATIC CATARACT: ONE YEAR REVIEW

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ABSTRACT

BACKGROUND: Traumatic cataract is a very common ocular emergency encountered by ophthalmologists worldwide. There is a long list of co-morbidities associated with traumatic cataract. Visual outcome is unpredictable after surgical management of the traumatic cataract.
OBJECTIVES: To study the presentation and surgical outcome of traumatic cataract following open and closed globe injury.
MATERIAL & METHODS: It is a prospective interventional case series. The study was carried out at Department of Ophthalmology, Saidu Group of Teaching Hospitals, Swat from 1st July 2015 to 30th June 2016 on the patients with traumatic cataract.
RESULTS: In this study we evaluated 40 eyes of 40 patients who presented with traumatic cataract and were admitted to our unit during the study period. There were 72.5% male and 27.5% female. Stick and wooden splinter was the most common traumatic agent responsible for traumatic cataract in 40% followed by stone in 22.5% cases. Preoperative visual acuity was perception of light (PL) to hand movements (HM) in 45%, counting fingers to 6/60 in 50% patients. 50% patients had postoperative visual acuity of less than 6/60, while 50% had visual acuity of 6/60 and above. Extracapsular cataract extraction (ECCE) with intraocular lens (IOL) was performed in 55% cases, while ECCE without IOL was done in 7.5% cases. The most common co-morbidity was corneal scar in 12.5%, 27.5% patients had combined co-morbidities while 25% had no co-morbidity.
CONCLUSION: Majority of the patients with traumatic cataract were young males. Postoperative visual acuity was better in those cases which were not associated with other co-morbidities. Surgical intervention was required in all cases and conventional ECCE with IOL implantation was the most commonly adopted surgical procedure. Trauma with stick and wooden splinter was the most common cause of traumatic cataract.
KEY WORDS: Traumatic cataract, Closed globe injury (CGI), Open globe injury (OGI), visual acuity (VA).

INTRODUCTION

Ocular trauma is a major cause of monocular blindness and low vision throughout the world. Approximately 2.5 million eye injuries occur annually in the United States. It is estimated that approximately 4-5% of patients seen in ophthalmic clinic are related to ocular injury[1]. Amongst the complications that can occur as a result of trauma, traumatic cataract is included. Khan MA et al[2] has recorded that amongst the combat ocular injuries, 18% cases had traumatic cataract. Traumatic cataract may present as acute, sub-acute or late sequel to ocular trauma. Traumatic cataract can occur secondary to both, open globe injury (OGI) and closed globe injury (CGI). Other associated complications include phacolytic, phacomorphic, pupillary block and angle recession glaucoma, phacoanaphylactic uveitis, retinal detachment, choroidal rupture, hyphema, retrobulber hemorrhage, traumatic optic neuropathy and globe rupture[3]. This study was undertaken to provide information about the visual outcome of patients admitted with traumatic cataract at the eye unit of Saidu Teaching Hospitals, Saidu Sharif, Swat.

MATERIAL AND METHODS

This is a prospective study of patients with a diagnosis of traumatic cataract due to open or

closed globe injury who were admitted in our unit for surgical intervention during the study period from 1st July, 2015 to 30th June, 2016. Inclusion criteria were the patients completing at least a 2 months follow up after surgery and a normal B-Scan ultra-sonography. An exclusion criterion was failing to verify a history of trauma. Fresh OGI with traumatic cataracts were also excluded. Data was collected with the help of a proforma including complete history regarding the age, sex, nature of trauma (open or closed globe injury) and traumatic agent. Clinical data obtained include visual acuity (assessed with Snellen chart), morphology of cataract, slit lamp examination, intraocular pressure, pupil reaction and ophthalmoscopy. Ocular co-morbidities associated with the traumatic cataract if present, were noted. A-Scan biometry and B-Scan ultrasonography were performed. Surgery was performed in all cases either under local or general anaesthesia. Type of surgery and type of IOL (when implanted) were noted. Intraoperative and postoperative complications and postoperative visual acuity were noted. Postoperative management consisted of topical antibiotics and topical steroids. Oral analgesic (ibuprofen) was given for the relief of pain. IOP lowering drugs were given when needed. Postoperative follow-up was performed on the first and tenth postoperative day and then after one month and two months periods.

RESULTS

In this study, we evaluated 40 eyes of 40 patients who were admitted from 1st July 2015 to 30th June, 2016 with traumatic cataract. During this period, a total of 805 cataract surgeries were performed. Traumatic cataract group comprised 5% of the total cataract workload. There were 29 (72.5%) male and 11 (27.5%) female. The age distribution is shown in table I.

Table I: Age Distribution of Patients (N=40)

Age	N	Percentage
Upto 10 years	8	20
11-20 Years	22	55
>20 Years	10	25
Total	**40**	**100**

Right eye was involved in 22 (55%) cases while left eye in 18 (45%) cases. Preoperative visual acuity data is shown in table II.

Table II: Pre-Operative Visual Acuity (N=40)

V.A	N	Percentage
PL +ve-HM	18	45
CF-6/60	20	50
>6/60	2	5
Total	**40**	**100**

N= Number, PL+ = Positive Perception of light, HM=Hand movement, CF=Counting finger

Open globe injury was present in 22(55%) cases and closed globe injury in 18 (45%) cases. List of causative agent is shown in table III.

Table III: Causative Agent of Trauma (N=40

Agent	N	Percentage
Stick/Wooden Piece	16	40
Stone	9	22.5
Thorn	3	7.5
Tennis Ball/Sports	2	5
Toy Pistol	2	5
Scissors/Knife	2	5
Road Traffic Accident	1	2.5
Hammer Piece	1	2.5
Electric Shock	1	2.5
History of Fall	1	2.5
Electric Wire	1	2.5
Fight/Assualt	1	2.5
Total	**40**	**100**

Ocular co-morbidities at the initial examination are shown in table IV.

Table IV: Ocular Co-morbidities (N=40)

Co-morbidities	N	Percentage
Corneal Scar	5	12.5
Anterior Capsule Rupture	3	7.5
Iridodialysis	2	5
Increase Intraocular Pressure	3	7.5
Zonular Dehiscence	3	7.5
Vitreous in anterior chamber	3	7.5
Combined co-morbidities	11	27.5
No co-morbidities	10	25
Total	**40**	**100**

Extracapsular Cataract Extraction (ECCE) with intraocular lens (IOL) was performed in 22 (55%) cases. Phacoemulsification with IOL implantation was performed in 15 (37.5%) cases while in 3 (7.5%) patients ECCE was performed without IOL implantation. Types of IOL implanted are shown in table V.

Table V: Type of IOL (N=40)

Type of IOL	N	Percentage
PMMA	19	47.5
Acrylic Foldable	18	45
No IOL	3	7.5
Total	**40**	**100**

Postoperative uncorrected visual acuity recorded on the first post-operative visit within two weeks of the surgery is shown in table VI.

Table VI: Post-operative Uncorrected Visual Acuity

V.A	N	Percentage
PL-HM	4	10
CF-< 6/60	16	40
6/60-6/18	12	30
>6/18	8	20
Total	**40**	**100**

16(40%) cases had 2 line improvement in visual acuity after refraction after two months follow up period. Three patients had postoperative second intervention. Among them 1 (2.5%) patient needed Yag laser capsulotomy, 1(2.5%) patient had to undergo trabeculectomy, while 1 (2.5%) patient was referred to vitreo-retinal surgeon for pansplana vitrectomy (PPV).

DISCUSSION

Cataract is the most common complication causing loss of vision following ocular injury. The gravest mistake an ophthalmologist can make is to treat an eye with a traumatic cataract as if it was an ordinary cataract as the management of traumatic cataract is challenging and may vary in individual cases. Prognosis is variable due to associated co-morbidities. Extent of associated damage to anterior and posterior segment, time of intervention, peroperative and postoperative complications are factors which determine the ultimate prognosis.

The mean age of the patients in our study was 15 years with the range of 3-54 years. The young age of traumatic cataracts is also supported by Karim et al[4] and Bowman et al[5] in their studies. The chances of trauma at young age is much more common. In our study, 30 patients (75%) were in the first two decades of their life. There were 72.5% male and 27.5% female in our study. The high ratio of male to female was also reported by Eckstein M et al[6]. Khokhar et al[7] has found no sex predilection in their study. However, the same study has shown the second decade as the most usual age of presentation for such cases, as in our study. Open globe injury (55%) was more common than closed globe injury (45%). The high occurrence of OGI is also reported by Rumelts[8] which is in contrast to another study conducted by Ojeda JCS et al[9]. In their study, 80% has suffered CGI and only 20% suffered OGI. In our study trauma with stick or a wooden piece was responsible for traumatic cataract in 40% cases. Ilsar M et al[9] also reported that the most common object to cause lens damage was wood splinter. 95% of the cases had visual acuity of less than 6/60 preoperatively. On the first postoperative visit within 2 weeks of the surgery, 50% patients had uncorrected visual acuity of less than 6/60. Blum M et al[11] has

reported improved visual acuity in 90% of the cases. However postoperative visual acuity was dependent on associated complications. In our study, 12.5% cases had corneal scar which was due to OGI. 27.5% cases had more than one co-morbidity in our study.

In our study, cataract surgery was done as a secondary procedure after the initial repair in patients with OGI. Traumatic cataract management as a secondary procedure or otherwise is a debatable issue worldwide in OGI. Controversy exists over timing of cataract extraction and intraocular lens (IOL) implantation. Arguments can be for both primary and secondary cataract extraction, and we need to look at the clinical facts before making the decision. Cataract extraction along with primary wound repair may have distinct advantages such as controlling inflammation and possibility of raised intraocular pressure (IOP) due to soft lens matter in the anterior chamber. Other advantages of primary lens removal are patient convenience and possibly cost-effectiveness[12]. In children and younger patients who are at risk of amblyopia, primary IOL implantation not only prevents amblyopia but also synechia formation that can close the bag by the time the secondary IOL implantation can be carried out[13].

Conversely, secondary lens removal has its own distinct advantages; the eye may be more quiet due to good control of intraocular inflammation, good media clarity and stable wound before planning for a traumatic cataract extraction. IOL power calculation is also appropriate if the implantation is planned for the second sitting. What every ophthalmologist must accept is that an injured lens requires many individualized, consciously made decisions regarding what to do, when and how to achieve the best possible outcome.

In our study, one patient (2.5%) had developed traumatic cataract due to an electric shock. The lens is the most sensitive tissue to electrical current in the eye. Though ocular electrical injuries are relatively uncommon, it can cause variety of complications depending on the voltage, current, pathway and duration of contact[14].

CONCLUSIONS

Stick and wood related trauma is one of the most common cause of cataract formation. Traumatic cataract is more common in children and young individuals of male gender. Postoperative visual acuity is better in those cases which were not associated with co-morbidities. Timing of cataract surgery and intraocular lens implantation in the setting of trauma is still debated worldwide. In adults where amblyopia is not an issue, the choice of surgery is governed by the surgeons own preferences and also to a certain extent by the status of the cataractous lens.

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