



Pattern of Presentation of Globe Injuries in Paediatric Population

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Purpose: To determine epidemiologic patterns of globe injuries in pediatric population.

Methods: The hospital records of 127 patients under the age of 12 years who presented with ocular trauma from January 2010 to January 2013 were retrospectively examined. Important variables perused and contemplated related to age and gender of children, etiology and nature of injury, intervention needed, and time factor regarding injury and its treatment etc.

Results: Most injuries (62.99%) occurred among boys. Most patients (52.75%) were in 6-8 years age group. Right eye injury occurred in majority (58.27%) of cases. In a clear majority (43.30%) of cases, cause of injury could not be delineated. Injuries occurred mainly in playfields(38.58%),schools(29.92%),&homes(17.32%). Globe penetration (68.50%) with corneal lacerations (54.33%) was the dominant pattern. Majority (62.99%) of cases had visual acuity less than 6/60 at presentation. Ocular surgery in addition to globe repair was needed in large (63.78%) number of cases. Large number (75.59%) presented from a 60 km peri-hospital circle. A significant (45.67%) percentage delayed their presentation in hospital with false expectation of self-resolution. Majority (56.69%) of cases took 12 hours to present to service hospital after initial presentation to a clinician. Good deal (77.17%) of patients pursued follow-ups up to three months regularly.

Conclusion: Globe injuries occur commonly in 6-8 years age group boys. Delayed presentation in hospital is under false hope of spontaneous resolution. However, once communicated properly, parents are keen in follow-ups.

Introduction:

Visual deprivation from ocular injuries in childhood is a condition that results in serious social, economic and healthcare providing implications and productivity compromises^{1,2}. Ocular trauma, resulting in rupture of eyeball, often requires repeated surgeries and prolonged, costly follow ups³. Ocular trauma is also known to have serious psychomorbidity consequences and societal maladjustments⁴.

Ocular trauma destructive enough requiring hospitalization is 13.2 per 100,000 persons per annum in a developed country like USA alone⁵. Among children, 18% ocular injuries are encountered below 12 years⁶.

Establishing clinical facts and maintaining good postoperative sequence is a magnanimous task amongst children³ in a developing economy. Dilemma of eye care doubles when it comes to establishing prognosis in developing eyes of children compromised by trauma⁷.

We studied patterns of presentation of globe injuries, demographics, etiological trends and social factors related to hospital presentation of children suffering from ocular trauma in children presenting in paediatric ophthalmology department of Mayo Hospital Lahore.

Patients and Methods:

This study was conducted at Paediatric Ophthalmology Department of College of Ophthalmology and Allied Vision Sciences / Institute of Ophthalmology Mayo Hospital Lahore. Hospital records of 127 patients under the age of 12 years who presented consecutively with ocular injuries from January 2010 to January 2013 were perused retrospectively. We included records of all the patients undergoing globe repair with us.

Study Variables that were focused upon and analyzed included:

1. Ethno-demographic variables e.g. age, sex,
2. Etiology and nature of injury related:
 - a. eye involved
 - b. cause of injury,
 - c. scenario of injury,
 - d. type of injury,
 - e. zone of injury,
3. Presenting visual acuity
4. Intervention needed in addition to globe repair
5. Sympathetic ophthalmitis
6. Distance of place of trauma from hospital

7. time taken to present to hospital
8. Reasons of delayed presentation
9. Time taken to institute surgical intervention after hospital presentation, and
10. Number of follow-ups pursued.

Eyeball breach was categorized as penetration (solitary full thickness entry), rupture, intra ocular foreign body and perforation (double breach of eye walls with entry and exit). Wound location was grouped in accordance with Ocular Trauma Classification Group zones: zone I, comprising of corneal lacerations, zone II, consisting of corneal lacerations extending to anterior 5mm of sclera and zone III, entailing all scleral involvements extending beyond 5mm from limbus⁸.

Patients were categorized into four age groups: 1-3 years age group, 3.5 to 5 years age range, 6 to 8 years age range and 9 to 12 years age group. Complete clinical assessment was done. Visual acuity, extent of laceration, relative afferent pupillary defect, hyphema, endophthalmitis, lenticular distortion, uveal prolapse, vitreous hemorrhage, vitreous prolapse, retinal detachment, intraocular foreign body and lid laceration were documented. Techniques of primary repair and secondary procedures were recorded. Patients were followed up until stable visual recovery.

Primary repair of all lacerations was done under general anesthesia. Corneal cuts were repaired with 10-0 nylon sutures and scleral closures were executed with 6-0 vicryl and 10-0 nylon sutures. Eyelid repair when needed was done with 6-0 silk. Vitreous avulsion at wound site was dealt with vitrectomy. Repositioning of prolapsed uvea was done where found healthy but necrotic uvea was excised. Lensectomy was done where cataract with capsular compromise was encountered. Primary evisceration or enucleation was never considered as a true option. Postoperatively the patients were treated with topical antibiotics, steroids and Cycloplegic agents. Patients were hospitalized for a five-day course of systemic antibiotics.

All the data was tabulated, compiled and analyzed with SPSS version 15.

Results:

One hundred and twenty seven patients were included in the study. Males were 62.99% (table2). Age group 6-8 years was predominantly (52.75%) involved (table1). Right eye was affected in 58.27% cases (table 3). In a vast majority (43.30%) of cases the cause of injury could not be identified (table4). In 68.50% cases trauma occurred either in playfield or in school (table 5). Globe penetration was recorded in 68.50% cases (table6). Corneal laceration was noticed in 54.33% cases (table 7). Visual acuity at

presentation was 6/60 or less in 62.99% cases (table 8). In 63.78% cases, another surgery in addition to primary globe repair was needed (table 9). Cataract removal had to be done in 30.71% cases (table 10). No sympathetic ophthalmitis was observed in any case during this short follow up span (table 11). Place of trauma was more than 60 km in 24.41% cases from Mayo Hospital, 30-60 km in 33.86% cases, 10-30 km in 24.41% cases and within 10 km in 17.32% cases (table 12). A profound majority of cases (54.33%) took more than two days to present in hospital (table 13). False expectation of healing was the dominant (45.67% cases) reason of delay followed by resource constraints (25.20%) (table 14). 56.69% cases were operated within twelve hours of presentation in hospital while 36.22% had a delay of more than 24 hours (table 15). Overwhelming majority (90.56%) exhibited good stable follow up trends (table 16).

Table 1: Age Categories(n=127)

Age range(years)	No of patients
1-3	3(2.36%)
3.5 -5	11(8.66%)
6-8	67(52.75%)
9-12	46(36.22%)

Table 2: Gender Predilection

Gender	No of patients
Male	80(62.99%)
Female	47(37.01%)

Table 3: Eye Involved (n=127)

Side	No of cases
Right	74(58.27%)
Left	53(41.73%)

Table 4: Cause of Injury

Cause of injury	Number of cases
Hook ,Key, Knife,Needle, Dagger,Door, Fall from bike, Fan, Hammer chisel, Plastic, bottle, Scissor, Sharpener, Iron piece, Wiper	14(11.02%)
Glass piece	6(4.72%)
Iron rod	3(2.36%)
Metallic wire	5(3.94%)
Pencil	4(3.15%)
RTA	10(7.87%)
Stick	10(7.87%)
Stone	3(2.36%)
Wire	7(5.51%)
Wood	5(3.94%)
Ball	2(1.58%)
Plastic bottle	2(1.58%)
Welding machine	2(1.58%)
Non specific	55(43.30%)

Table 5: Scenario Of Injury

Scenario	No of cases
Home	22(17.32%)
School	38(29.92%)
Playfield	49(38.58%)
Roadside	3(2.36%)
Miscellaneous	15(11.81%)



Table 6: Type of Injury

Type	No of cases
Penetration	87(68.50%)
Rupture	29(22.83%)
Intraocular foreign bodies	3(2.36%)
Perforation	8(6.3 1%)

Table 7: Zone Of Injury

Zone	No of cases
Corneal laceration	69(54.33%)
Corneoscleral laceration(5mm sclera)	31(24.41%)
Corneoscleral laceration(beyond 5mm sclera)	27(21.26%)

Table 8: Presenting Visual Acuity

Visual acuity	No of cases
NPL	21(16.54%)
HM -CF	37(29.13%)
6/60 -6/24	22(17.32%)
6/18 -6/12	29(22.83%)
6/9and better	18(14.17%)

Table 9: Additional Intervention

Additional intervention	No of cases
Needed	81(63.78%)
Not needed	46(36.22%)

Table 10: Intervention Needed In Addition To Globe Repair

Type of surgery	No of cases
Lid repair	16(12.60%)
Cataract removal	39(30.71%)
Hyphema evacuation	22(17.32%)
Retinal detachment	1(0.78%)
Foreign body removal	3(2.36%)

Table 11: Sympathetic Ophthalmitis

Time elapsed to assess for sympathetic ophthalmia	No of cases
One year	Nil
Two years	Nil

Table 12: Distance of Place of Trauma from Presenting Hospital

Distance (kilometres)	No of cases
10	22(17.32%)
30	31(24.41%)
60	43(33.86%)
More than 60	31(24.41%)

Table 13: Time Taken In Presentation From Place Of Trauma To Presenting Hospital

Delay interval	No of cases
Within 3 hours	7(5.51%)
4 - 12 hours	17(13.39%)
Within 24 hours	21(16.54%)
Within 48 hours	13(10.24%)
More than 2 days	69(54.33%)

Table 14: Reasons of Delayed Presentation

Reasons	No of cases
Lack of awareness of injury	21(16.54%)
Lack of guidance	16(12.59%)
Resource constraints	32(25.20%)
False expectation of healing	58(45.67%)

Table 15: Time Taken from Presentation in Hospital to institution of Surgical Intervention

Time consumed	No of cases
6 hours	9(7.08%)
12 hours	72(56.69%)
24 hours or more	46(36.22%)

Table 16: Number of Follow ups Pursued by Patients

No of follow ups	No of cases
One	12(9.44%)
Two	17(13.39%)
Three	98(77.17%)

Discussion

Ocular injuries are amongst frequent causes of acquired unilateral visual debility in pediatric population⁹. Injuries are less common in pre-schoolers¹⁰. 6-8 years age group are more prone to encounter ocular integrity breaches^{9,10}. Males have a clear predominance for the risk^{11,12} as is right eye. In a significant percentage of patients the cause of injury could not be elicited reflecting either carelessness or lack of awareness of the incident or ignorance of delicacy of ocular texture or a state of denial to accept fear of organ compromise or status of self pity in community. Playfields^{7,13}, schools and homes were the scenes of trauma in overwhelming percentage of population. More than fifty percent of cases had corneal lacerations, which if attended promptly could have been visually less significant. However, delay of more than two days in presentation in 54.33% cases of our study group played havoc with vision

even before presentation resulting in 62.99% cases having presentational vision of less than 6/60. 30.71% cases were having associated cataract, which was handled surgically. During the whole follow up period, no sympathetic ophthalmitis was noticed. It was interesting to identify that only 17.32% cases presented to our hospital from 10 km peri-hospital circle. However, 82.68% patients presenting from more than 10 km circles reflect perception of ultimate ocular trauma centre for institute of ophthalmology mayo hospital. It can be worked upon to establish ocular trauma unit in the institute. False hopes inculcated by quacks and untrained approachable medical professionals were the leading cause contributing to delayed presentation and resultant visual compromise. Lack of awareness of inflicted injury was a significant reason of delay in presentation. However, 37.79% patients could not reach hospital in optimum time because of lack of guidance and resources. It was alarming to identify that 92.91% cases had a delay of more than twelve hours in institution of surgical intervention even after reaching the institute. 90.56% cases showed good follow up tendency until stable visual and anatomical status.

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