

Evaluation of Clinical Profile of Blunt Ocular Trauma and Its Management: A Prospective Study

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Abstract:

Background and Objectives: Ocular trauma is a preventable public health problem throughout the world. These injuries occur in sports, home, assault, agriculture, and industrial and road traffic accident. Early diagnosis and prompt management ensures a better visual outcome improving the quality of life of affected individual; as the initial actions and interventions may be determinants for the final visual prognosis.

To study the clinical profile of patients presenting with blunt ocular injuries in tertiary care centre and assessment of different types of management in various type of blunt trauma injuries.

Material and Methods: This Prospective observational study was carried out in 100 patients from both rural and urban area suffering from blunt trauma patients attending the outpatient department and casualty under upgraded department of Ophthalmology, N.S.C.B. Medical College, and Jabalpur (M.P.) from 1st Jan 2020 to 31st August 2021. This was accomplished subsequent to receiving authorization from the Scientific Review Committee and Institutional Ethics Committee, as well as obtaining written consent from the patients.

Results: In our study maximum number of cases 59 patients (59%) presented with the symptoms of diminution of vision with pain followed by 20 patients (20%) with the symptoms of diminution of vision, pain, watering, photophobia and foreign body sensation. At the time of presentation, steroids were given to 51 patients (51%), steroid and cycloplegics with pressure lowering agents given to 16 patients (16%) antibiotic eye drop and other anti-inflammatory eye drops with pressure lowering agents were given to 17 patients (17%), removal of foreign body with pad and bandage done to 15 patients (15%) and lid construction surgery with conservative treatment in a patients (1%). at the time of discharge oral steroids were prescribed to 51 patients (51%), steroids and cycloplegics with pressure lowering agents in 16 patients (16%), antibiotics eye drops with cycloplegics to 32 patients (32%) and oral antibiotics to a patients (1%). In our study it was found that after providing adequate treatment there was good visual recovery in 46 patients (46%), moderate visual recovery in 35 patients (35%) and poor visual recovery in 19 patients (19%).

Conclusion: After considering the frequency, causes, nature, consequences and final visual outcome, any closed globe injury however trivial it may appear initially, must be deemed as an ophthalmic emergency and adequately dealt with proper care, caution to maintain normal structure and function of the eye. Better road traffic rules and education of public regarding protection of eye at work places helps in reducing the incidence of ocular trauma.

Keywords: Blindness; Blunt ocular trauma; RTA, Visual outcome.

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Introduction

Ocular trauma is one of the major causes of ocular morbidity & blindness. The delicate nature of the eyes makes it prone for an irreversible damage and permanent visual impairment even with trivial trauma. [1] Ocular trauma results in a wide spectrum of eye injuries which involves the globe,

optic nerve and adnexa ranging from superficial to vision threatening complications. Since last three decades pathophysiology and management of these disorders has advanced tremendously. Despite advances in treatment modalities the prognosis of these injuries is still uncertain. Blindness has

regularly been found the most feared of all disabilities and any threat to vision is emotionally wrenching. [2]

Ocular trauma is a preventable public health problem throughout the world. The global annual incidence of ocular trauma is around 55 million of which 750000 cases require hospital admission every year. [3] These injuries occur in sports, home, assault, agriculture, and industrial and road traffic accident. In India reported incidence of ocular trauma varies from 1% to 5%. Early diagnosis and prompt management ensures a better visual outcome improving the quality of life of affected individual; as the initial actions and interventions may be determinants for the final visual prognosis.

Aim and Objectives:

To study the clinical profile of patients presenting with blunt ocular injuries in tertiary care centre and assessment of different types of management in various type of blunt trauma injuries.

Material and Methods:

This Prospective observational study was carried out in 100 patients from both rural and urban area suffering from blunt trauma patients attending the outpatient department and casualty under upgraded department of Ophthalmology, N.S.C.B. Medical College, Jabalpur (M.P.) from 1st Jan 2020 to 31st August 2021. This was accomplished subsequent to receiving authorization from the Scientific Review Committee and Institutional Ethics Committee, as well as obtaining written consent from the patients.

Inclusion criteria:

- Blunt trauma patients of all age groups.

Exclusion criteria:

- Patients with history of ophthalmic complains previous to trauma
- Uncooperative patients with physical and mental abnormalities

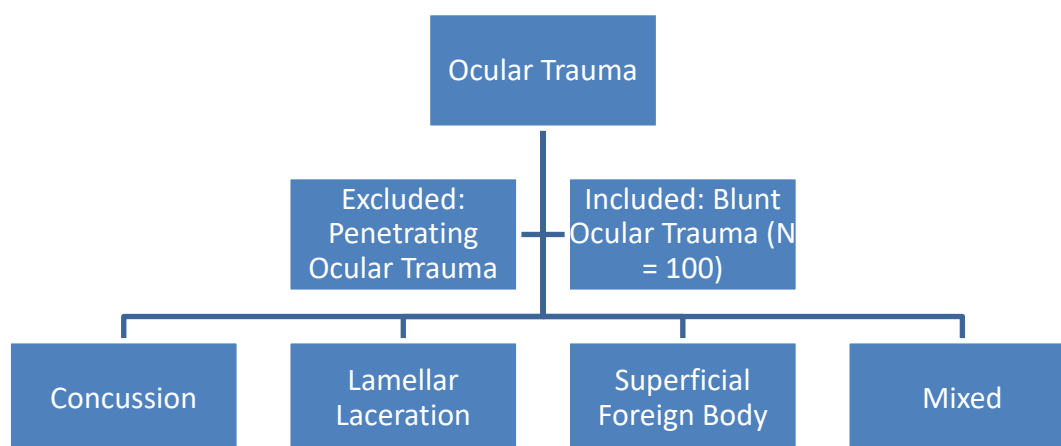


Figure 1: Consort diagram showing patient selection

Methodology:

A detailed history was taken in each case with special emphasis on points like the mode of injury, extent of injury, floaters, diplopia, symptoms at presentation included pain, loss of vision, blurring of vision, redness, increased tearing, swelling around eye and bleeding, any associated systemic illness, medication and family history.

Visual acuity aided and unaided with pinhole and refraction along with Anterior and Posterior segment examination was done for each one of the patient. X-ray and/or CT scan and/or B-scan were done wherever necessary.

Statistical Analysis:

Data was entered in Microsoft Excel and analyzed

using STATA version 14. Categorical variables were summarized as proportions. Duration of follow up was summarized as median with inter-quartile range. Association between categorical variables was done using chi square test of Fischer exact test. Statistical significance was defined as a P value of 0.05 or below.

Results:

A total of 100 patients were selected by convenient sampling. In present study, the ocular injuries are more common in young age group and in peoples who are in productive age group. Males are more affected as they more involved in road traffic accidents, industrial and agricultural occupation. The demographic profile of study population was as shown in Table 1.

Table 1: Demographic variables

Variables		N	%
Age groups	≤20 years	10	10
	21-30 years	21	21
	31-40 years	32	32
	41-50 years	24	24
	>50 years	13	13
Gender	Male	85	85
	Female	15	15
Affected eye	Right eye	66	66
	Left eye	34	34
Locality	Urban	67	67
	Rural	33	33
Occupation	Student	18	18
	Farmer	17	17
	Laborer	39	39
	Housewife	13	13
	Businessmen	11	11
	Teacher	02	02
Mode of injury	Road traffic accidents	39	39
	Assault	20	20
	Foreign body	18	18
	Chemical injury	15	15
	Vegetative matter	03	03
	Play and sports	02	02
	Fall from height	02	02
	Bull horn	01	01
Pattern of injury	Concussion	61	61
	Lamellar laceration	22	22
	Superficial foreign body	17	17

In our study maximum number of cases 43 patients (43%) reported with the visual acuity between 6/60-6/24 followed by 31 patients (31%) with the visual acuity less than 6/60. [Table 2]

Table 2: Visual acuity at the time of presentation

Visual acuity	N	%
No PL	01	01
PL +	11	11
HM + - CM3FT	31	31
6/60 – 6/24	43	43
6/18 – 6/12	10	10
6/9 – 6/6	04	04
Total	100	100

In our study maximum number of cases 59 patients (59%) presented with the symptoms of diminution of vision with pain followed by 20 patients (20%) with the symptoms of diminution of vision, pain, watering, photophobia and foreign body sensation. [Table 3]

Table 3: Symptoms presented at the time of presentation

Symptoms	N	%
1. Loss of vision and pain	01	01
2. Diminution of vision and foreign body sensation	07	07
3. Diminution of vision and pain	59	59
4. Diminution of vision with pain and foreign body sensation	04	04
5. Diminution of vision with pain and redness	06	06
6. Diminution of vision with pain ,watering, photophobia and foreign body sensation	20	20
7. Foreign body sensation	03	03
8. Total	100	100

In our study at the time of presentation, steroids were given to 51 patients (51%), steroid and cycloplegics with pressure lowering agents given to 16 patients (16%) antibiotic eye drop and other anti-inflammatory eye drops with pressure lowering agents were given to 17 patients (17%), removal of foreign body with pad and bandage done to 15 patients (15%) and lid construction surgery with conservative treatment in a patients (1%). [Table 4]

Table 4: Treatment given to the patients at the time of presentation

Treatment given		N	%
1.	Lid reconstruction surgery and conservative treatment	01	01
2.	Steroids	51	51
3.	Steroid, cycloplegics drops and pressure lowering agents	16	16
4.	Conservative, Antibiotic eye drop, cycloplegics drops ,Pad and bandage and pressure lowering agents	17	17
5.	Removal of Foreign body, Antibiotic eye drops, Pad and bandage	15	15
6.	Total	100	100

In our study, at the time of discharge oral steroids were prescribed to 51 patients (51%), steroids and cycloplegics with pressure lowering agents in 16 patients (16%), antibiotics eye drops with cycloplegics to 32 patients (32%) and oral antibiotics to a patients (1%). [Table 5]

Table 5: Treatment given to the patients at the time of presentation

Treatment given		N	%
1.	Oral Steroids	51	51
2.	Oral Steroid, cycloplegics drops and pressure lowering agents	16	16
3.	Antibiotic eye drops and cycloplegics drops	32	32
4.	Oral Antibiotics	01	01
5.	Total	100	100

In our study it was found that after providing adequate treatment there was good visual recovery in 46 patients (46%), moderate visual recovery in 35 patients (35%) and poor visual recovery in 19 patients (19%). [Table 6]

Table 6: Improvement showed in the patients after provided treatment and management

Improvement		N	%
1.	Good visual recovery	46	46
2.	Moderate visual recovery	35	35
3.	Poor visual recovery	19	19
4.	Total	100	100

Discussion

Ocular trauma is one of the major causes of ocular morbidity & blindness. The delicate nature of the eyes makes it prone for an irreversible damage and permanent visual impairment even with trivial trauma.

In the present study highest incidence was seen in age group of >40yrs which was found to be 37% followed by 32% of the age group between 31-40 years. In a study by Cho J et al [4] highest incidence was found to be 28.8% in age group between 11-20 years. In a study done by Ulagantheran [5] highest incidence was seen in the age group between 21-30 years (43.2%) and it was 41.4% in the age group 11-20 years in a study done by Kearns P. [6]

In the present study incidence of ocular injury was found to be higher in males than in females. This is in concordance with a study done by Canavan YM and Archer DB [7] in 205 patients in which affected males were 85.4% and females were

14.6% with a male to female ratio of 5.8:1. This is supported by studies done by Kearns P [6] which also showed male to female ratio to be 5.4:1, whereas a much lesser male to female ratio was seen in a study done by Britten MJA [8] which was found to be 2.8:1. Since males are more commonly involved in outdoor activities, sports, employed in factories and industries and driving male preponderance is seen.

In a study done by Khatry SK et al [9] the most common occupations were farming (27.3%), domestic work (23.9%) and student (13.2%), labourers 10.5%. The most common mode of injury in the present study was found to be due to road traffic accident which constituted 39%. Similar findings were observed in studies by Guly et al [10], Shivanand B patil et al, [11] Prachee Nagrale et al [12] and Maurya et al. [13]

Among objects causing ocular trauma, non-metallic objects (85%) were the most common culprit and causes severe injuries to the eyes. Other studies like

Krishnan et al, [14] Umesh et al, [15] Mishra et al [16] found similar findings.

In a study done by Canavan YM and Archer DB [7] 75.1% achieved Visual acuity of >6/12 after treatment. In a study done by Kearns P, [6] 88.98% achieved Visual acuity of >6/18 after treatment. The improvement in BCVA after treatment was found to be statistically significant. In present study 84% of the patients were managed medically which includes steroids in 51% patients, steroids with pressure lowering agents and cycloplegics drops in 16% patients and pad and bandage in 32% patients with removal of foreign body in 15% patients. Only 1% patient had lid construction surgery with conservative treatment. After considering the frequency, causes, nature, consequences and final visual outcome, any closed globe injury however trivial it may appear initially, must be deemed as an ophthalmic emergency and adequately dealt with exercising utmost care, caution and speed to salvage whatever possible in terms of structure and function of the eye.

Conclusion:

Closed globe injuries lead to a significant amount of damage to the intraocular structures. Most injuries occur in predictable situations and hence are potentially preventable. After considering the frequency, causes, nature, consequences and final visual outcome, any closed globe injury however trivial it may appear initially, must be deemed as an ophthalmic emergency and adequately dealt with proper care, caution to maintain normal structure and function of the eye. Better road traffic rules and education of public regarding protection of eye at work places helps in reducing the incidence of ocular trauma.

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