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Original Research Article

The Comprehensive Evaluation and Management of Ocular Trauma in a Tertiary Eye Care Center of Central India

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Abstract:

Objectives: This study was aimed to examine the presence of visual damage due to ocular trauma and assess visual outcomes, and document the clinical spectrum and outcome following ocular injuries among patients presenting to tertiary care centre in central India.

Methods and Material: This was a hospital-based prospective interventional study conducted over a period of two years from August 2019 to August 2021. Patients with ocular injuries attending the casualty and the Ophthalmology department were included in the study after applying the inclusion and exclusion criteria. A detailed and comprehensive ophthalmic examination was performed and visual acuity was noted at the presentation and follow-ups. The patients were followed up at regular intervals, initially at one week and subsequently at three and six weeks upto 6 months.

Results: During this study, 182 patients and 200 eyes with ocular injuries taken into consideration, amongst them there were 141 males (77.47%) and 41 females (22.53%) patients. The male to female ratio was 3.43:1. [Table- 1] During this study, age group with more incidence of ocular trauma was 21 - 30 years (31.32%). [Table -1] In our study, according to BETTS classification close globe injuries (69.5%) were more common than open globe injuries (30.5%). [Table-2] Contusion injuries (62%) were more common in closed globe injury while penetrating globe injuries (17%) were more common in open globe injuries. [Table-2] Ocular trauma score (OTS) 5 belonged to close globe injuries whereas ocular trauma score 1 belonged to open globe injuries, remaining ocular trauma score 2, 3, 4 belonged to both open and closed globe injuries and most of ocular injuries were between ocular trauma score 3 to 5. [Table-3] Ocular adnexa (75.5%) were predominately affected in ocular injuries with periorbital edema or ecchymosis (26%) being most common followed by lid laceration (23.5%) whereas sclera (10%) was least affected. [Table-4] Conjunctiva (47%) was the second most common structure to be involved in ocular trauma with subconjunctival haemorrhage (28%) being most common clinical presentation with conjunctival injuries. [Table-5] Cornea (42.5%) and iris (43.5%) were affected in almost equal proportions, presenting commonly as corneal foreign body (12.5%) and iris prolapse (17%) respectively. [Table-5] Traumatic cataract (7.5%) was the most common finding followed by Subluxated or dislocated (4.5%) in patients with Lens related injuries (13%). [Table-5] Among anterior chamber (36.5%) involvement, traumatic hyphema (17%) was found to be most common presentation [Table-5]. Vitreous (14%) was the most common structure affected followed by retina (12%) in posterior segment injuries (35%).[Table-6] Lid repair (23.5%) was most commonly performed surgery in closed globe and corneal-scleral laceration related surgeries (28.5%) most common surgical intervention in open globe injuries. [Table-7] Corneal opacities (25.5%) most common late complication followed by cataract (7.5%) and secondary glaucoma (5%) after ocular trauma. [Table-8] In closed globe injuries, 34.54% patients had less than 6/60 vision at the time of presentation which reduced to 12.23% after 6 months. [Table-9] In open globe injuries, only 44.26% of patient had visual acuity less than 6/60 after 6 months as compared to 96.72% at the time of presentation. [Table-10]

Conclusion: Ocular trauma remains a significant cause of monocular vision loss especially in developing country like India. Rural and young population are more prone to ocular trauma, entailing increased lifetime of disability years. Though open and closed injuries both causes long term complication and vision loss, open globe has poorer prognosis and ocular trauma score (OTS) is a simple and effective way to assess the visual of outcome. Medical as well as surgical intervention forms integral part of management in ocular trauma patients.

Keywords: Ocular Trauma, BETTS, Open Globe Injury, Closed Globe Injury.

Introduction

The eye makes up 0.27 % of total body surface area and 4% of facial area but it is the third most common organ affected in trauma, after hand and feet.[1] Ocular trauma is a significant public health problem and preventable cause of visual impairment and blindness. It affects whole however developing countries are more prone and can lead to permanent visual impairment and unilateral blindness [2-5]. The annual incidence rate of hospitalization for eye injuries per lakh population per year is 5-16% worldwide. Blindness resulting from trauma has prevalence rates of 0.6-0.8%. The use of eye protective devices in India is very low.[2]

It may present at any age group specially children and young population and males are predominantly affected. Paediatric group ocular trauma (12-38%) is the most avoidable cause of childhood blindness. [2,4-5]

According to WHO (World Health Organisation), the global annual incidence of ocular trauma is around 55 million worldwide, 750,000 cases require hospitalization, including 200,000 open globe injuries. In world, it is estimated that blindness in 1.6 million people, bilateral low vision in 2.3 million people, unilateral blindness in 19 million people are due to ocular injuries.[6] Despite major socioeconomic impact, very less data on risk factors and magnitude are available specially in developing countries like India. [7-8]

The ocular trauma ranges from minor corneal abrasions and conjunctival haemorrhage to lacerated globe with complete loss of vision [9]. Ocular trauma is encountered in 13–16% of all systemic Injuries and as high as 83% in patients with head injuries[10-13], warranting the need for a formal evaluation by ophthalmologists in all head injuries and suspect cases in systemic injuries.

Globe injuries have been variably and often incorrectly mislabelled over the centuries. The first major attempt to address this and introduce a standardized terminology was with the introduction of the Birmingham Eye Trauma Terminology (BETT). BETT took into account the nature of the injury, integrity of the ocular coats, internal disruption, and the presence of intraocular foreign bodies, two broad classifications along with part from a formal classification into closed- and open-globe injuries.[14]

Impact of ocular trauma in terms of need for medical care, loss of income and cost of rehabilitation services points towards the need for strengthening of preventable measures worthwhile in present scenario.[4]

Management of ocular trauma has improved over the year dramatically leaps and bound over the years. Newer investigation such as B and A scan ultrasonography, OCT, CT-Scan, MRI have greatly improved the assessment and help to taking appropriate medical and surgical decision. The availability of newer micro surgical technique has made possible better management and visual outcome.

Despite being a common public health problem, till date very few systemic observational studies are available on ocular trauma specially in developing countries like India. So in our study, we did a comprehensive evaluation of various aspect of ocular trauma like type of injuries, affected age group, visual impairment, management, complication and final visual outcome after management of various type of ocular injuries.

The present study was conducted in Department of Ophthalmology, NSCB Medical College, Jabalpur which help in planning and provision of eye care and implementing preventive and safety strategies.

This study gives detailed information about nature and severity of ocular morbidity due to ocular trauma and brings into light various management techniques for overall betterment of trauma patients.

Aims and Objectives

1. To study the epidemiology and incidence of ocular trauma in various age group.
2. To evaluate clinical presentation and associated complications of ocular trauma.
3. To evaluate the nature and severity of ocular trauma by using various parameters like best corrected visual acuity, Digital X-Ray of orbit, B-
4. Scan, OCT, CT- Scan, CECT Scan and MRI.
5. To manage various ocular trauma with our best possible endeavour.
6. To evaluate final visual outcome and advocate measures to improve visual impairment.
7. To use this study as a bench mark for classifying and managing ocular trauma for future references in times to come.

Material and Method

In this study, all the patients attending outdoor, indoor and casualty at Department of Ophthalmology, NSCB Medical college Jabalpur with primary diagnosis of trauma during the periods of from August 2019 to August 2021 were included in this study. The protocol was approved by Institutional Ethics Committee prior to initiation of study and was registered. Written informed

consent was obtained from all the participants regarding participation.

Study Area and Target Population: This study is conducted in Department of Ophthalmology, Netaji Subhash Chandra Bose Medical College and Hospital, Jabalpur where population came from both rural and urban area.

Duration: From August 2019 to August 2021

Sample Size: 182 patients and 200 eyes.

Study Design: This study is a prospective observational study.

Inclusion Criteria: All patients with ocular trauma attending OPD, IPD and casualty at NSCB Medical college, Jabalpur.

Exclusion Criteria: Patients with Life-threatening injuries.

All the participants in the study were subjected to the following detailed personal and clinical history recording. The history included past and present medical history and past and concomitant drug history. Social history and personal history were also evaluated. A detailed General physical, systemic and ophthalmic examination was done and recorded in proforma.

Details ophthalmic examination done on the following heading.

- Visual status in injured and non-injured eye.
- External examination: Skin, face, and orbital injuries are noted.
- Ocular mobility.
- Pupils: Size, shape, symmetry and reaction to light.
- Anterior segment examination on torch light and slit lamp.
- Posterior segment examination with direct or Indirect ophthalmoscope,
- 90 D lens wherever possible.
- Intraocular pressure (with the Schiotz tonometer): whenever possible.
- In eyes with corneal edema and hyphema, gonioscopy was done at the next follow up.
- Appropriate investigation done for example Blood investigation, X- ray Orbit, B- Scan, OCT, CT-Scan and MRI.

After examination, patients were classified on the basis of Birmingham eye trauma terminology system (BETTS) into open and closed globe injuries and Ocular Trauma Score (OTS) was calculated.

Following this appropriate management was planned depending on the nature and severity of injury. After an initial follow-up visit at 7th day Post-op, patients were evaluated monthly for 6 months and at each visit patient's visual acuity were assessed and sign of any complication was looked into and recorded.

Statistical Analysis

All subjects who were regular on follow-up for total of 6 months were included for analysis.

The data collected was entered in MS excel sheet and thereby analysed using the software SPSS version 20.0. The categorical variables were expressed as frequencies and percentages. Z statistics for comparison in two proportions and chi-square or Fisher's exact test was applied to compare 2X2 contingency table.

Observation and Results

The present study entitled "The comprehensive evaluation and management of ocular morbidity in patients afflicted with various types of ocular trauma" done on 182 patients and 200 eyes afflicted with various types of ocular trauma, attending the Department of Ophthalmology, NSCB medical college, Jabalpur. This study was conducted during the academic year 2018-2021. Following observation was seen during the study.

Table 1: Age and Gender wise distribution of ocular trauma patients

Age group (years)	No. of patients		Total	Percentage
	Male	Female		
1-10	14	3	17	9.34%
11-20	20	7	27	14.84%
21-30	48	9	57	31.32%
31-40	24	8	32	17.58%
41-50	17	6	23	12.64%
51-60	12	5	17	9.34%
61-70	4	2	6	3.29%
>70	2	1	3	1.65%
Total	141	41	182	100%

Table 2: Injury classification according to Birmingham Eye Trauma Terminology System

Ocular injuries	No. of patient's eyes	Percentage
Closed globe	**139**	**69.5%**
Contusion	124	62%
Lamellar laceration	15	7.5%
Open globe	**61**	**30.5%**
Laceration	**43**	**21.5%**
Penetrating	34	17%
Intra ocular foreign body (IOFB)	04	2%
Perforating	05	2.5%
Rupture	**18**	**9%**

Table 3: Correlation of ocular trauma score with various ocular injuries at the time of presentation

Ocular trauma Score (Raw score)	Ocular injuries	Number	Total
1	Penetration with endophthalmitis and RD with HM	1	**9**
(0-44)	Perforated globe injury and endophthalmitis with no PL	1	
	Perforated globe injury and endophthalmitis with HM	2	
	Penetrating globe injury and endophthalmitis with no PL	1	
	Ruptured globe injury with no PL	1	
	Rupture globe injury and RD with PL	3	
2	Intra ocular foreign body with endophthalmitis	02	**34**
(45-65)	Penetration with endophthalmitis Ruptured globe injury with VH	01	
		14	
	Penetrating globe injury with RD	02	
	Perforating globe injury	02	
	Contusion with RD	07	
	Contusion with RAPD	06	
3	Penetrating globe injury with Hyphema	14	**44**
(66-80)	Penetrating globe injury with VH	6	
	Penetrating globe injury	9	
	Lamellar laceration with VH	5	
	Contusion with total Hyphema	6	
	Contusion with RAPD	4	
4	Intraocular foreign body	2	**51**
(81-91)	Lamellar laceration with Hyphema	4	
	Lamellar laceration with berlins edema	3	
	Contusion with corneal foreign body	9	
	Contusion with corneal oedema Contusion	14	
		19	
5	Lamellar laceration	3	**62**
(92-100)	Contusion along with 3rd 4th, 5th 6th	59	
	7th nerve palsy and orbital fracture		

Table 4: Ocular structure involvement in Ocular trauma

Ocular structure	No. of Eyes	Percentage %
Ocular adnexa	151	75.5%
Conjunctiva	94	47%
Cornea	85	42.5%
Cornea-sclera	23	11.5%
Sclera	20	10%
Anterior chamber	73	36.5%
Iris/ pupil	87	43.5%
Lens	26	13%
Posterior segment	70	35%

Table 5: Distribution of anterior segment ocular injuries

Ocular Adnexal injuries	**No of eyes**	**Percentage**
Orbital fracture	6	3%
Blowout fracture	3	1.5%
Orbital haemorrhage	1	0.5%
Orbital emphysema	1	0.5%
Carotid cavernous fistula	1	0.5%
Intra orbital foreign body	1	0.5%
Extraocular muscle rupture	2	1%
Periorbital edema/Ecchymosis	52	26%
Lid laceration	47	23.5%
Lid abrasion	15	7.5%
Traumatic ptosis	3	1.5%
Punctal and canalicular injuries	3	1.5%
Traumatic optic neuropathy	7	3.5%
Optic nerve avulsion	1	0.5%
Papilledema (in head injuries)	2	1%
Nerve related injuries	6	3%
Distribution of conjunctival injuries		
Subconjunctival haemorrhage	56	28%
Chemosis	28	14%
Conjunctival laceration	07	3.5%
Conjunctival foreign body	03	1.5%
Distribution of corneal and scleral injuries		
Corneal abrasion	15	7.5%
Recurrent Corneal abrasion	03	1.5%
Corneal oedema	14	7%
Corneal foreign body	25	12.5%
Corneal ulcer	03	1.5%
Blood staining of cornea	03	1.5%
Corneal lamellar laceration	08	4%
Corneal laceration Corneal laceration without iris prolapse Corneal laceration with iris prolapse	 04 05	 2% 2.5%
Corneal rupture	03	1.5%
Corneal perforation	02	1%
Corneal scleral injuries	**23**	**11.5%**
Corneal scleral laceration Without uveal tissue prolapse With uveal tissue prolapse	11 7 4	5.5% 3.5% 2%
Corneal scleral rupture	12	6 %
Scleral injuries	**20**	**10%**
Scleral laceration Without uveal tissue prolapse With uveal tissue prolapse	15 4 11 2	7.5% 2% 5.5% 1% 1.5%
Scleral rupture	3	
Scleral perforation		
Distribution of anterior chamber injuries		
Foreign body	02	1%
Traumatic hyphema	34	17%
Hypopyon	03	1.5%
Angle recession	21	10.5%
Traumatic glaucoma	11	5.5%
Traumatic hypotony	02	1%
Distribution of Iris/Pupil injuries		
Anteflexion of iris	02	1%
Retroflexion of iris	01	0.5%
Prolapse	34	17%

Synechiae	05	2.5%
Traumatic mydriasis	09	4.5%
Traumatic miosis	01	0.55
Iridodialysis	11	5.5%
Traumatic aniridia	01	0.5%
Iridocyclitis	23	11.5%
Lens related injuries		
Subluxated/ dislocated lens	09	4.5%
Vossious ring	01	0.5%
Traumatic cataract	15	7.5%
Traumatic absorption of lens	01	0.5%

Table 6: Distribution of posterior segment injuries

Posterior segment injuries	No. of cases	Percentage
Vitreous		
Vitreous haemorrhage	25	12.5%
Vitreous prolapse	03	1.5%
Retina		
Retinal haemorrhage	01	0.5%
Berlins oedema	09	4.5%
Retinal detachment	13	6.5%
Retinal tear	01	0.5%
Macular edema	02	1%
Macular hole	01	0.5%
Choroid		
Choroidal rupture	02	1%
Choroidal haemorrhage	01	0.5%
Choroidal detachment	02	1%
IOFB In Posterior Segment	02	1%
Endophthalmitis	08	4%

Table 7: Managements of ocular trauma patients

Management	No.	Percentage
Medical	**47**	23.5 %
Surgical (including primary and second surgeries)	**175**	87.5 %
Lid tear repair	47	23.5 %
Foreign body removal	21	10.5 %
Gunderson flapping	01	0.5 %
Corneal repair	06	3%
Corneal repair with iris tissue abscission	08	4%
Corneal-scleral repair with iris tissue abscission	20	10 %
Scleral repair with uveal tissue abscission	15	7.5 %
Scleral repair	08	4 %
Anterior chamber wash	12	6 %
SICS With PCIOL	01	0.5 %
MICS with PCIOL	02	1%
ECCE	09	4.5 %
ECCE With ACIOL	01	0.5 %
ECCE With SFIOL	02	1%
IOFB Removal	04	2%
Pars plana vitrectomy	07	3.5 %
Intravitreal injection	07	3.5 %
Orbital floor implant	01	0.5%
Enucleation	01	0.5 %
Evisceration	02	1 %

Table 8: complications in ocular trauma patients

Complication	Number	Percentage
Cicatricial ectropion	03	1.5%
Entropion	01	0.5 %
Ptosis	01	0.5%
Lagophthalmos	02	1%
Irregular lid margin	03	1.5 %
Corneal opacity	51	25.5 %
Staining of cornea	03	1.5 %
Cataract	15	7.5 %
Secondary glaucoma	10	5 %
Retinal detachment	05	2.5 %
Proliferative vitreoretinopathy	05	2.5 %
Distorted globe	03	1.5 %
Phthisical eye	05	2.5 %

Table 9: Initial and final best corrected visual acuity in closed globe injuries

Visual acuity	At the time of presentation In OPD/ Wards	Best corrected visual acuity after 6 months									
		No PL	HM , PL	CF1 ft 5/60	6/60	6/36	6/24	6/18	6/12	6/9	6/6
6/6-6/12	62								09	11	42
6/18-6/60	29				5	3	2	3	7	6	3
5/60-CF1 ft	25			4	2	3	3	2	3	7	1
HM, PL	21		9	2	1	1	2	4	2		
No PL	2	2									
Total	139	2	9	6	8	7	7	9	21	24	46

Table 10: Initial and final best corrected visual acuity in Open Globe Injuries

Visual acuity	At the time of presentation In Opd/Ward	Best corrected visual acuity after 6 months									
		No PL	HM, PL	CF1ft -5/60	6/60	6/36	6/24	6/18	6/12	6/9	6/6
6/6-6/12											
6/18-6/60	2							1	1		
CF1 ft5/60	19			1	5	6	4	3			
HM, PL	37		13	10	9	3	2				
No PL	3	3									
Total	61	03	13	11	14	9	6	4	1		

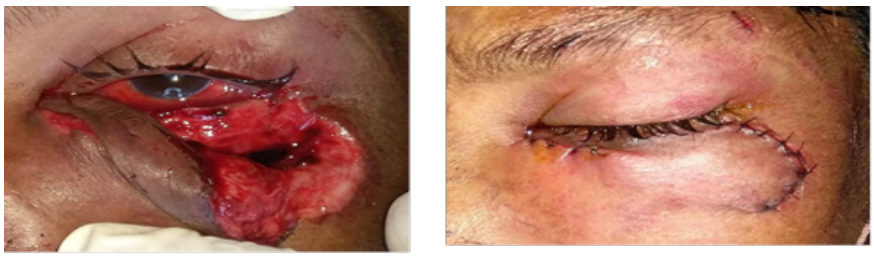

Figure 1: full thickness lid tear pre & postop

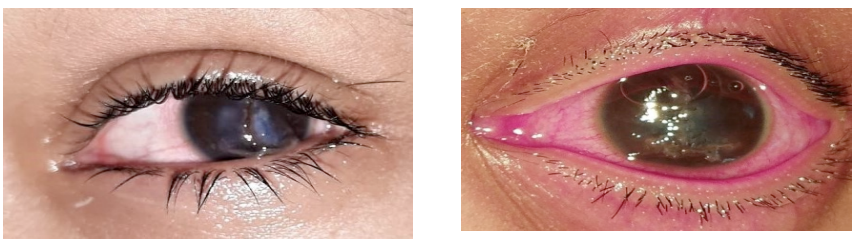

Figure 2: full thickness corneal tear pre & postop

Figure 3: limbal tear with iris prolapse pre & post-op

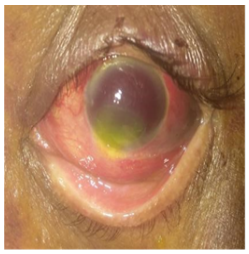

Figure 4: total hyphema

Figure 5: conjuntival laceration

Figure 6: iridodialysis

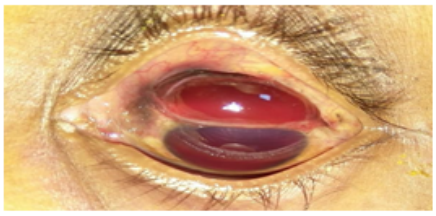

Figure 7: scleral rupture with uveal prolapse

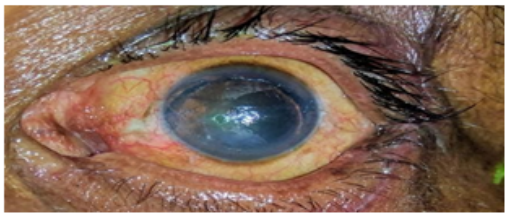

Figure 8: dislocated lens in anterior chamber

Figure 9: Dislocated lens in vitreous cavity (On B-Scan.)

Figure 10: vitreous Haemorrhage (On B-Scan)

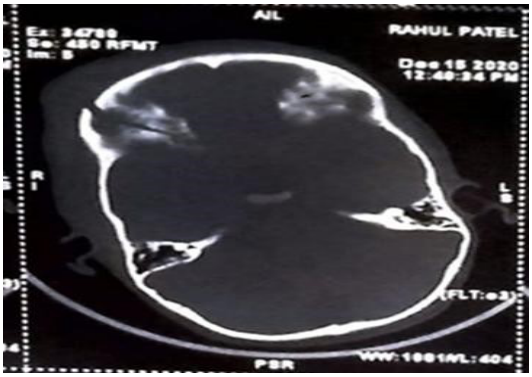

Figure 11: Orbital fracture (on CT Scan)

Figure 12: (Right eye) Blowout fracture

Discussion

Ocular trauma is one of the major causes of preventable blindness especially in developing countries like India. We did a prospective observational study on ocular trauma in patients attending the tertiary care centre of Jabalpur.

Gender: In our study, most of the patients who came to our department inflicted with various type of ocular trauma were males (77.47%) [Table-1]. This is in accordance with the previous studies conducted by Karaman et al (2004) [15], Shivanand B patil et al (2016) [6], Ekta syal et al (2018) [21], Maurya et al [27] (2019).

This could be explained by more active outdoor activities performed by male gender in present scenario, making them more susceptible and health seeking community of our population, requiring more amount of medical and surgical intervention.

Age group: Our study showed 31.32% of ocular trauma occurred in young adults (21-30 years) while in paediatric age group (1-10 years) and elder individuals constitutes 9.34 % and 1.65% respectively [Table-1]. Studies with similar findings are Tielsch J M (1995) [20], McCarty et al (1999) [8], Fasina oluyemi et al (2011) [18], Ekta syal et al (2018) [16]. It is probably due to more involvement of young adults in outdoor activities and violence, makes them more susceptible to trauma, whereas restricted mobility of the elderly makes them less susceptible to trauma. Majority of individuals involve in outdoor activities have higher incidence of ocular trauma and they will usually belong to young age group as similar as previous studies by Shivanand B. Patil et al (2014)[6], Ekta syal et al (2016)[16].

Type of injuries (BETT classification): In our study, closed globe injuries due to blunt trauma predominated (69.5%) and only 30.5% injuries were open globe [Table-2]. This was consistent with studies by Karaman K et al (2004)[15], Mehul shah et al (2008)[19], Cillino S et al (2008)[20], Mishra et al (2013)[21], Anil kumar bhupally et al (2015)[22].

OTS score (prognostic indicator): In this study, we observed patients with ocular trauma score (OTS) 5 belonged to closed globe injuries and OTS score 1 belonged to open globe injuries, remaining OTS score 2, 3, 4 belonged to both open and close globe injuries [Table-10]. Other study also advocated same finding He cao et al (2012) [28], Dutoit N et al (2015) [23], RD page et al (2016) [24], M Ustaoglu et al (2018)[25].

Ocular structure involved: Ocular adnexa (75.5%) were predominately affected in ocular injuries with periorbital edema or ecchymosis (26%) being most common followed by lid laceration (23.5%) and lid abrasion (7.5%) similar to studies, Alam J et al (2014) [26], Kumarasamy et al (2016) [27], Menon L et al (2017) [27] and Marudhamuthu E et al (2017) [27] whereas sclera was affected in least (10%) [Table-11,12]. Conjunctiva (47%) was the second most common structure to be involved with sub conjunctival haemorrhage (28%) being most common clinical presentation followed by chemosis (14%), Conjunctival laceration (3.5%), conjunctival foreign body (1.5%) [Table-13].

Cornea (42.5%) and Iris (43.5%) were affected in almost equal proportions, presenting commonly as corneal foreign body (12.5%) and iris prolapse (17%) respectively [Table-11,14,16]. Similar results were seen in study of Mela et al (2005) [28], Manhas et al (2019)[29]. Traumatic cataract (7.5%) was the most common finding followed by subluxated or dislocated (4.5%) in patients with lens related injuries [Table-4]. Similar results seen in study of McCarty et al (1999)[8], Wong et al (2002)[30].

Among anterior chamber (36.5%) involvement, traumatic hyphema (17%) was found to be most common presentation. Angle recession (10.5%) was second and traumatic glaucoma (5.5%) was third most common finding [Table-11,15]. This is probably due to increased susceptibility for angle recession and glaucoma in patients with hyphema. Similar findings were seen in studies by Julio et al (2002)[32], KD bojiken et al (2015)[33].

In our study, vitreous was the most common structure affected in posterior segment injuries (35%). Presenting, predominantly as vitreous haemorrhage (12.5%) followed by retinal detachment (6.5%)[Table-6]. Dana et al (1993) [34] reported that the patients presenting with vitreous haemorrhage had sustained ocular trauma in 12.3% and Cox et al (1980) [35] reported that 12% of traumatic retinal detachment occurred immediately and 30 % within one month of injury.

Endophthalmitis was found in 4% of studied patients and was more commonly due to lacerated wound which was same as Hooshang faghihi et al (2012) [36].

Management: In our study, conservative medical management was required in 23.5% patients whereas a significant proportion of patients needed surgical intervention (83.5%). Lid repair (23.5%) being most common in closed globe and corneal-scleral rupture and laceration related surgery (28.5%) most common surgical intervention in open globe injuries[Table-]. It is similar to study done by Lee and Oh (1990)[37] and Ekta syal et al (2018)[21]. This emphasized on the need of hour being proper operation theatre protocols and trained professionals in management of ocular trauma patients.

Complications: [Table-20]

Late complication occurred in 53.5% of cases, with various types corneal opacities being (25.5%) most common and late onset cataract and secondary glaucoma was found mainly in closed globe injury patients.

Other complications were namely tractional retinal detachment (2.5%), proliferative vitreoretinopathy (2.5%), phthisical eye (2.5%), distorted globe (1.5%) which is similar to study done by Vats et al (2008) [38]**.**

Final visual outcome: In closed globe injuries, visual acuity of patients improved significantly after 6 months. At the time of presentation patients with vision less than 6/60 were 34.54% which reduced to 12.23% after 6 months [Table-9]. It was noted in our study that betters the visual acuity at the time of presentation better the final visual outcome. This was similar with study conducted by Jain et al (1987)[39]

Even though patients with open globe injury also improved after 6 months but the extent of improvement was much less as compared to closed globe injury. Only 44.26% of patient's eyes had visual acuity less than 6/60 after 6 months as compared to 96.72% at the time of initial presentation [Table-22]. Also, our current study showed that vitreous haemorrhage and retinal detachment were poor prognostic factor for visual outcome, similar as other studies by Schmidt et al (2008)[40] and Han SB (2010)[41].

In our study, it was noted that ocular trauma clinically assessed and managed on time was an excellent tool in reducing the burden of preventable blindness in our society.

Summary and Conclusion

During this study, 182 patients and 200 eyes with ocular injuries taken into consideration, amongst them there were 141 males (77.47%) and 41 females (22.53%) patients.

Ocular trauma remains a significant cause of monocular vision loss especially in developing country like India. Rural and young population are more prone to ocular trauma, entailing increased lifetime of disability years.

Most injuries occur in predictable situations and hence are potentially preventable. After considering the frequency, causes, nature, consequences and final visual outcome, any ocular trauma 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.

In many cases there is a considerable time lag between injury and presentation to the hospital. The reason for delay can be due to long distances patients need to travel to reach hospital, lack of conveyance, poverty, ignorance, indigenous first aid and self-medications. These situations can be tackled by creating awareness among people, social upliftment and easy accessibility of health care services. Utmost care and precautionary measures should be taken in high risk groups like factory workers. Since ocular trauma leads to severe visual impairment it's better to prevent it. Better road traffic rules and education of public regarding protection of eye at work places helps in reducing the incidence of ocular trauma.

Though open and closed injuries both causes long term complication and vision loss, open globe has poorer prognosis and ocular trauma score (OTS) is a simple and effective way to assess the visual of outcome. Medical as well as surgical intervention forms integral part of management in ocular trauma patients.

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