A CLINICAL STUDY AND PROFILE OF OCULAR TRAUMA AT CIMS, BILASPUR

1) ABSTRACT-

In this study, we aim to document the clinical spectrum and outcomes following treatment due to ocular trauma among patients presenting to CIMS, Bilaspur. This was a prospective interventional study of all ocular emergencies except chemical injuries presenting between July 2023 and June 2024. Overall, there were 662 ocular emergencies, of which 598 were mechanical injuries (598/662; 90.33%). Most cases of trauma belonged to the 21–30 years age group (322; 53.84%). The most common cause of injury were road traffic accidents.

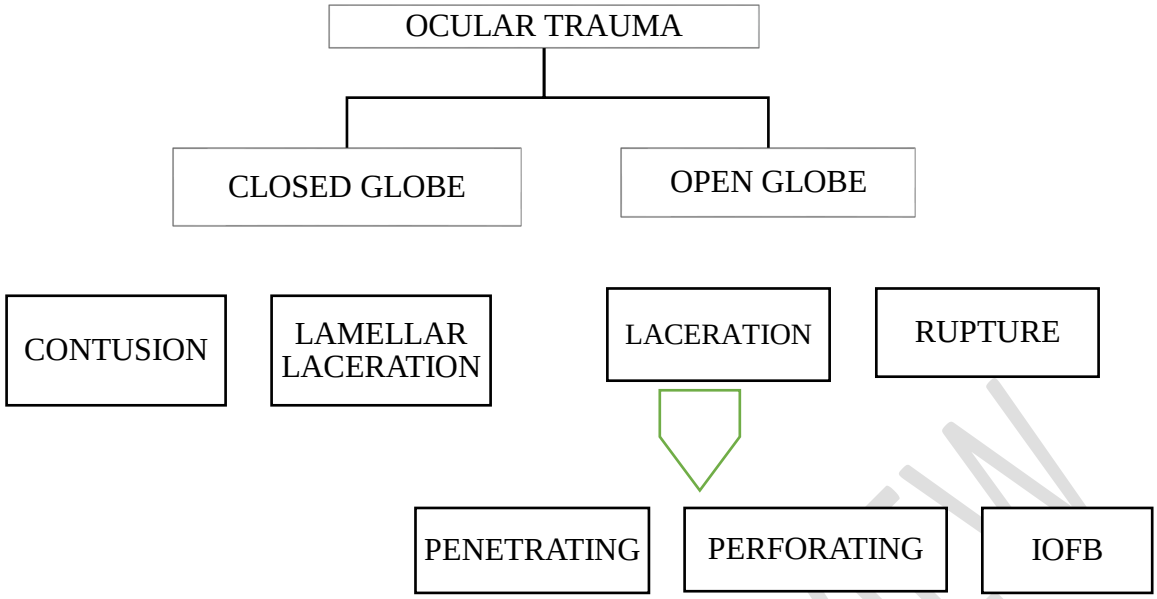
Keyword: ocular trauma, ocular emergency, mechanical injuries, road traffic accidents

2)INTRODUCTION-

Ocular injury is the commonest ocular emergency, which constitute three quarters of cases with the impact of trauma on the human eye ranging from minimal abrasions to a lacerated globe.[1] Globally, approximately 1.6 million people turn blind every year due to eye injuries, [2,3] most of which are preventable.[4] The nature and patterns of injuries differ from region to region based on occupation and other socio-demographic factors. It is important to understand these patterns, to not only prevent ocular injuries but also to ensure that the appropriate management resources are available.

There have been numerous individual reports on ocular trauma. WHO has reported 55 million eye injuries causing restriction of daily activities, of which 1.6 million go blind every day.[5] Vats et al., have reported the prevalence of ocular trauma to be 2.4% of population in an urban city in India. 11.4% of these are blind.[6] The other aspects include terminology and classification of ocular trauma [Figure 1]. Among the standard systems available, Birmingham Eye Trauma Terminology is the one most widely accepted.[7]

Chart 1-CLASSIFICATION OF OCULAR TRAUMA-



ZONES OF INJURY-

ZONES	OPEN GLOBE INJURY	CLOSED GLOBE INJURY
I	Cornea including limbus	External (conjunctiva, cornea, sclera)
II	Limbus to 5mm posterior into sclera	Anterior segment to posterior lens capsule
III	Posterior to anterior 5mm sclera	Posterior segment

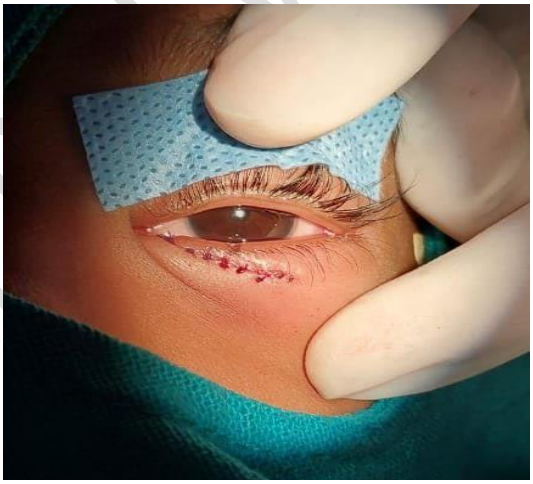
3)METHODS-

This was a prospective interventional study of all ocular emergencies presenting between July 2023 and June 2024. Chemical injuries were excluded. Data were collected using a structured data collection format and recorded for the type of injury, location of the injury, and complete ocular evaluation. The ocular injuries were classified as per Birmingham Eye Trauma Terminology System.

4)DIFFERENT CASES SERIES-

CASE 1-Left eye lower lid avulsion

CASE 2- Left eye Lower lid marginal tear



CASE 3-Right eye upper lid avulsion

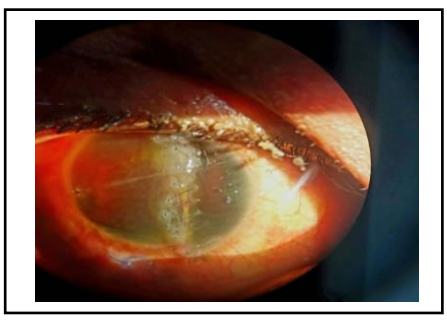
CASE 4-Bear bite showing avulsion of scalp skin with multiple laceration around eye(Anterior segmnt of both eye was within normal limits)

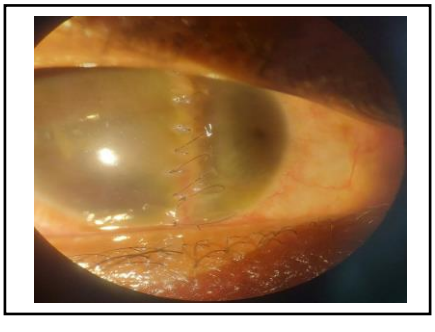
Procedure-Suturing was done following ARV and rabies immunoglobulin infiltration locally and systemically

CASE 5-Dog bite (inverted Y-shaped laceration extending from forehead to lower lid of both eye)

Procedure-Suturing was done following ARV and rabies immunoglobulin infiltration locally and systemically

CASE 6- Corneo-scleral tear





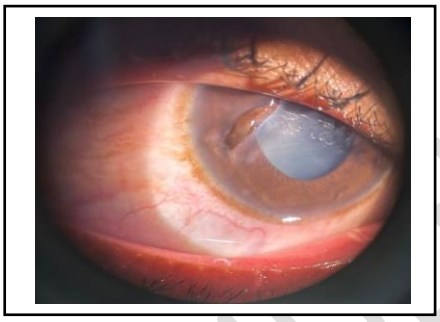
Full thickness corneal tear extending vertically from 12-6'O clock with scleral tear with iris tissue prolapse with AC collaspse (VA-PL negative)

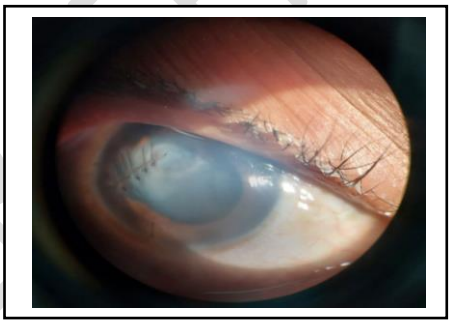
Procedure-Wound exploration and repair done under nil visual prognosis (on follow up at 1 week, AC is well formed with sutures intact and wound healthy; VA-PL negative)

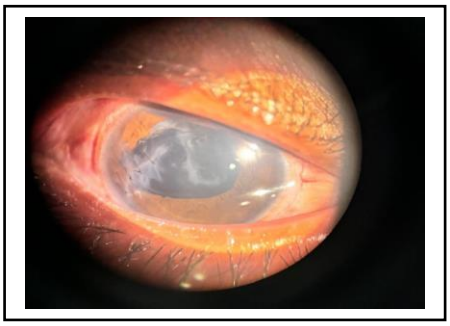
5 weeks follow up

(VA-PL negative)

CASE 7- Corneal tear-







Right eye full thickness corneal tear with iris tissue prolapse with traumatic cataract

VA(RE)-HM+PR accurate

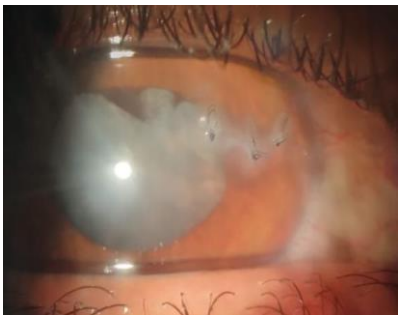
Procedure-Wound exploration and corneal tear repair done under guarded visual prognosis (follow up 1 week after corneal tear repair; VA-HM+ PR accurate

Lens extraction done at 10 weeks with BCL application

VA(RE)-3/60

CASE 8- Corneal tear (right eye)-

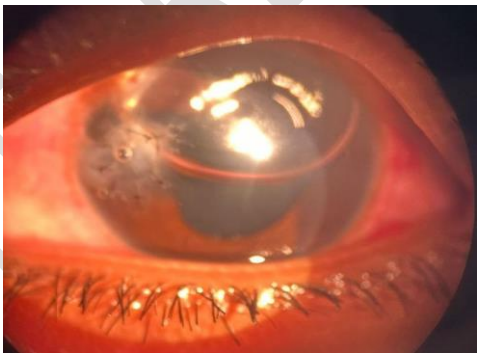
RE full thickness sealed corneal tear with iris tissue incarceration with traumatic cataract (VA-HM+ PR accurate)



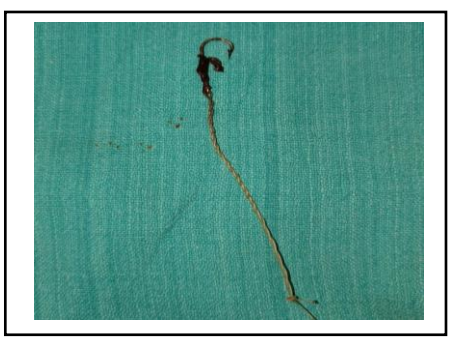
Procedure-corneal tear repair done under guarded visual prognosis (Follow up at 1 week; VA-3/60)

CASE 9-Left eye corneal perforation with iris tissue prolapse-

Procedure-Corneal patch grafting with BCL application (POD 1)



CASE 10-Conjunctival foreign body (Fish hook wire in palpebral conjunctiva)-



Overall, there were 662 ocular emergencies, of which 598 were mechanical injuries (598/662; 90.33%). Most cases of trauma belonged to the 21–30 years age group (322; 53.84%). Males were more frequently affected (412/598; 68.89%) as compared to females (186/598; 31.10%). Most cases were unilateral (526/598; 87.95%) and were caused by road traffic accidents (RTAs) (485; 81.10%).

FIGURE 1- DISTRIBUTION OF OCULAR TRAUMA CASES ACCORDING TO AGE GROUP

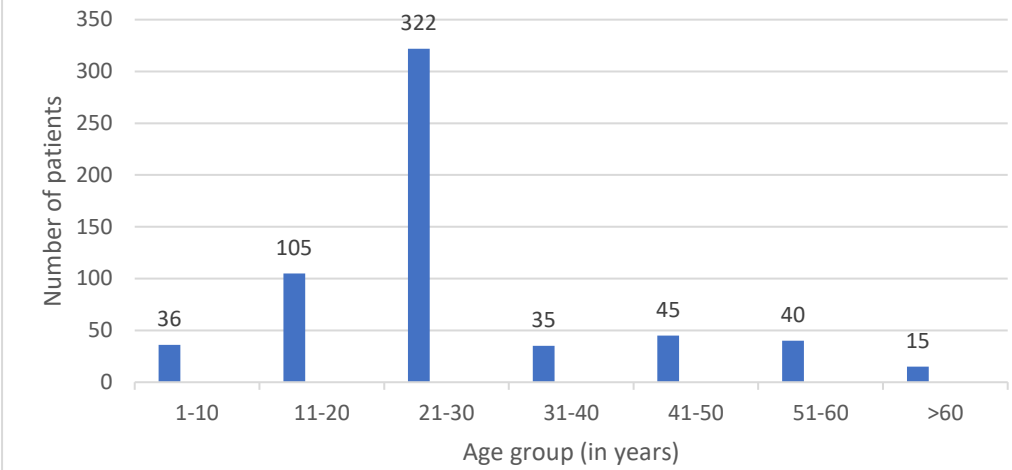


FIGURE 2- GENDER WISE DISTRIBUTION TOTAL-598

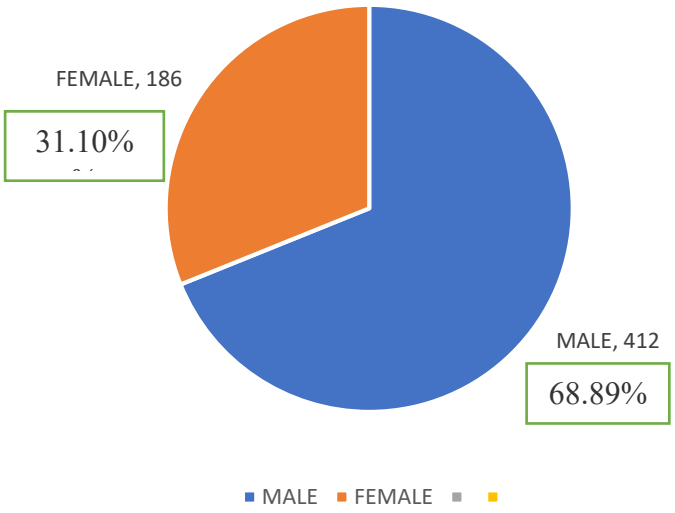
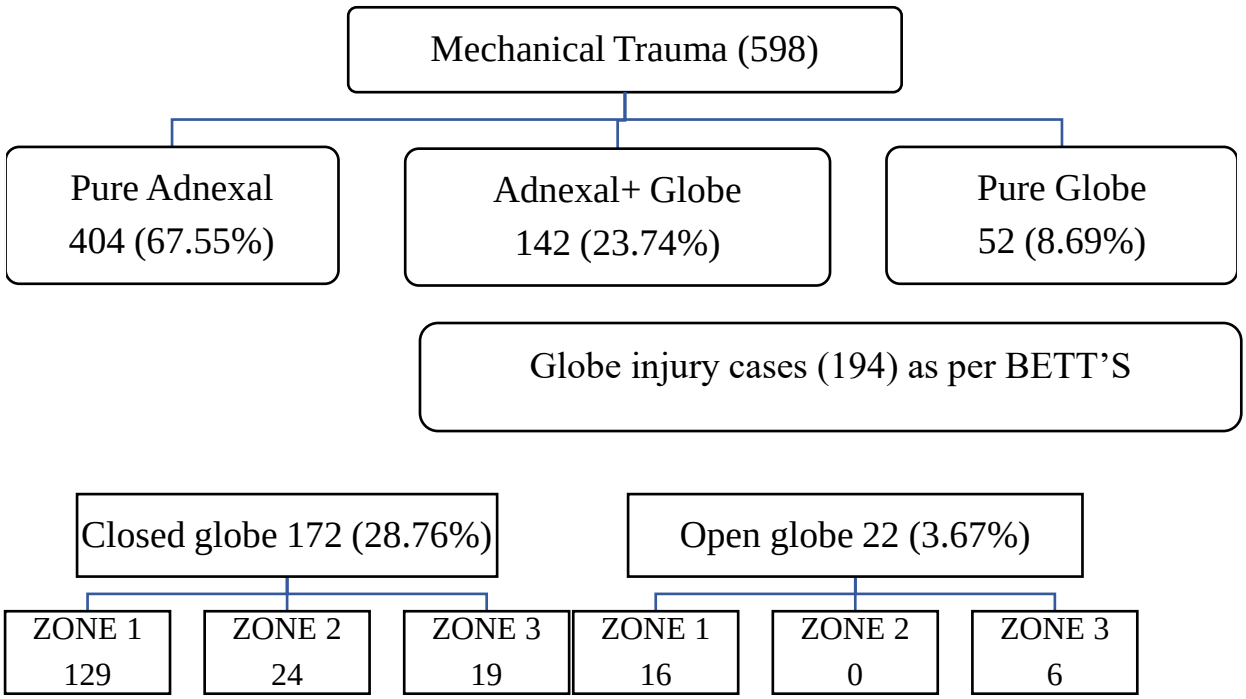


FIGURE 3- THE DISTRIBUTION AND CLASSIFICATION OF THE INJURIES



ular on of was t %) of closed-globe injuries and rupture was commonest mechanism in open-globe injuries. There were total 546 cases where adnexa were involved among which 78 cases had lid laceration.

TABLE 1: OCULAR EXAMINATION FINDINGS IN ADNEXAL INJURIES

TYPE		NUMBER
LID	Lid abrasion and periorbital edema	323(59.15%)
	Lid tear, lid abrasion and periorbital edema	78(14.28%)
	Eyebrow tear, lid abrasion and periorbital edema	145(26.55%)
TOTAL		546

TABLE 2: OCULAR EXAMINATION FINDINGS IN GLOBE INJURIES

VARIABLE	CATEGORY	NUMBER
CONJUNCTIVA	Conjunctival congestion	70
	Subconjunctival haemorrhage	180
	Tear	2
	Foreign body	17
CORNEA	Abrasion	18
	Foreign body	30
	Tear	22
ANTERIOR CHAMBER	Hyphaema	8
	Cells, flare	8
PUPIL	RAPD	7
	Traumatic mydriasis	8
POSTERIOR SEGMENT	Berlin's edema	6
	Retrobulbar neuritis	7
	Choroidal tear	2
	Vitritis	2
	Vitreous haemorrhage	2

6)DISCUSSION-

This study involved 662 patients with ocular trauma who presented to CIMS, Bilaspur over a span of 1 year. In our study, the majority of ocular trauma patients (53.84%) were in the age group of 21-30 years. Poy Raiturcar et al. [8] conducted a study among 500 patients, and they reported that the prevalence of ocular injuries was highest in the age group of 21-40 years (45%).The age distribution of these cases, with nearly half being less than 30 years of age shows that ocular trauma occurs more commonly in younger people.[9,10] In our study, males constituted 68.89% of the patient population while females comprised 31.10%, resulting in a male-to-female ratio of around 2.5:1 in accordance by more involvement of males in driving vehicles, risky occupations, better access to health services, and more time spent outside compared to females in our country. A study by Karve et al. [11] found that males were affected 3.7 times more than females. The most common cause of injury in our cases was RTA with almost two-thirds of the cases, as reported in the literature as well.[12] Visual acuity at presentation is the most important predictor of prognosis following trauma, which in turn depends on the severity of the injury, posterior segment involvement, and time elapsed between injury and presentation. [13,14] Blindness is more likely in patients with open-globe injury than closed-globe injuries. Hence, the prevention of eye injuries is of utmost importance and should be achievable by the use of helmets and improved road safety measures.

The most common mode of injury was road traffic accidents (485;81.10%) followed by workplace injuries whereas in a few studies, workplace injuries were more common than roadside injuries but these studies were done among agriculture and daily wage labourers.

[13,14] In last one year, 3 cases were reported due to bear bite. Out of the injuries reported, maximum injuries were due to sudden encounters while doing their morning routine chores. Among these, 2 had multiple laceration around eye while one patient had globe rupture. Two-thirds of injuries involved only the adnexa and a further quarter the adnexa and globe representing a wide spectrum of presentations that require a multidisciplinary approach. The most commonly affected zone in most of the studies is zone 1. We encountered 172 cases (28.76%) of closed-globe injuries and only 3.67% were open-globe injuries; previous studies have shown a prevalence of closed-globe injuries to be as high as 72%.[14]

The commonest mechanism of injury among closed-globe was contusion while all open-globe cases had blunt rupture. We have encounter 22 cases of corneal and corneoscleral tear in 1 year; one patient had sealed corneal perforation with traumatic cataract with vision of counting finger from 3 feet. Following repair and lens extraction with PCIOL implantation, patient had vision of 6/9 while in another case, patient had full thickness corneal tear with traumatic cataract with vision of hand movement, corneal tear repair was done on first visit following which after 10 weeks, cataract extraction with PCIOL implantation was done. On follow up, patient got a vision of 3/60.Patients with corneoscleral tear were repaired under nil visual prognosis to maintain ocular integrity. Posterior segment trauma is associated with poor visual outcome however patients with post traumatic retrobulbar neuritis were managed as per ONTT trial [15,16] On follow up, 5 patients got vision of 6/18 or better in the affected eye from counting finger of 3 feet.

7)CONCLUSION-

Ocular trauma is the most ocular emergency. In our environment, RTAs are the commonest causes of ocular injuries followed by workplace injuries. Males and young adults were particularly affected. We need to explore strategies to minimize ocular trauma as a priority. Appropriate preventive measures and equipment while driving, and at hazardous workplaces, can potentially reduce ocular injuries.

8) DECLARATION OF PATIENT CONSENT-

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity but anonymity cannot be guaranteed.

9) COMPETING INTERESTS-

Authors have declared that no competing interests exist.

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