

ANALYSIS OF MEDICO-LEGAL CASES REGISTERED AT EYE CASUALTY IN FAKHRUDDIN ALI AHMED MEDICAL COLLEGE AND HOSPITAL, BARPETA, ASSAM

Sewali Das¹, Mritunjay Sharma²

¹Assistant Professor, Department of Ophthalmology, Fakhruddin Ali Ahmed Medical College, Barpeta, Assam.

²Senior Resident, Department of Ophthalmology, Fakhruddin Ali Ahmed Medical College, Barpeta, Assam.

ABSTRACT

BACKGROUND

It is not unusual for an ophthalmologist to encounter medico-legal cases in practice. This study was conducted to analyse the clinical profile of medico-legal cases registered at the eye casualty in Fakhruddin Ali Ahmed Medical College in Barpeta, a tertiary care hospital in Assam.

MATERIALS AND METHODS

Descriptive study, data collected from the MLC Register. Cases were classified as per the Ocular Trauma Classification Group system.

RESULTS

Out of 196 patients, 166 (84.69%) were male. 60.2% of the patients were found to be in the 21-40 age group. Bilateral involvement was seen in 30 patients (15.30%). It was observed that 182 (92.85%) patients suffered mechanical trauma with ocular injury sustained by 131 (66.8%) patients and injury to the lid or orbit without damage to the globe by 51 (26.02%) patients. CGI (119 eyes) was found to be significantly higher than that of OGI (30 eyes). Of the 119 eyes that sustained CGI, the most common type of injury was Type A or contusion (78.99%). Zone I involvement was highest (82.35%). RAPD (Relative Afferent Pupillary Defect) was seen in 7 eyes (5.88%). 83 (69.7%) eyes had visual acuity in Group 1 ($\geq 6/12$). Of the 30 eyes that sustained OGI, 16 (53.3%) of these can be attributed to Type B injury (Penetrating). Zone II involvement was highest in 12 (40%) eyes. The presence of RAPD was detected in 11 (36.6%) eyes. 14 (46.6%) eyes had visual acuity (VA) in Group IV (hand movement to perception of light). Chemical injury was observed in 4 patients (2.04%) and malingering was found in 10 patients (5.1%). Physical assaults by the fist (51.5%) and Road Traffic Accidents (RTA) (32.65%) were the causes for trauma in maximum number of cases.

CONCLUSION

Ocular injury was found to be the more common form of mechanical trauma; within that, the presence of CGI was found to be significantly higher than that of OGI. With regard to zonal involvement, Zone I recorded the highest share in CGI and Zone II in OGI. In addition, contusion and penetrating accounted for the highest share in CGI and OGI cases respectively.

KEYWORDS

Ocular Trauma Classification Group, Mechanical Trauma, Malingering, Relative Afferent Pupillary Defect (RAPD), Visual Acuity, Medico-legal Case (MLC).

HOW TO CITE THIS ARTICLE: Das S, Sharma M. Analysis of medico-legal cases registered at eye casualty in Fakhruddin Ali Ahmed Medical College and Hospital, Barpeta, Assam. J. Evolution Med. Dent. Sci. 2017;6(93):6717-6721, DOI: 10.14260/jemds/2017/1454

BACKGROUND

Medico-legal case can be defined as 'A case of injury or ailment, etc.; in which investigations by the law enforcing agencies are essential to fix the responsibilities regarding causation of the injury or ailment'.^[1]

It is not unusual for an ophthalmologist to encounter such cases in practice. However, there is considerable paucity of literature providing comprehensive data on incidence, distribution and other aspects of this particular kind of cases; in the domain of Ophthalmology.

This study analyses the clinical profile of MLCs visiting the eye casualty of FAAMCH, a tertiary care centre in the Barpeta district of Assam.

'Financial or Other Competing Interest': None.
Submission 21-11-2017, Peer Review 03-12-2017,
Acceptance 06-12-2017, Published 11-12-2017.

Corresponding Author:

Dr. Sewali Das,

Faculty Quarters,

Fakhruddin Ali Ahmed Medical College,

Joti Gaon, Barpeta-781301, Assam.

E-mail: dradas4@gmail.com

DOI: 10.14260/jemds/2017/1454



MATERIALS AND METHODS

For this descriptive study, data from the MLC register was collected for the time period from July 2015 to June 2017. A total of 196 cases were identified as MLCs which included those of vehicular accidents, alleged foul play, trauma/burns suggesting commission of an offense by somebody and those registered upon request of the patient as well as discretion of the medical officer. Copies of reports were obtained, detailing each patient's MLC number, name, age, sex, caste & occupation, father's name, complete address, date and time of reporting, time of incident, accompanying person, date of examination and identification marks and signature/left-thumb impression of the patient. The name(s) of the accompanying constable as well as the date and time the report was sent to the police station are also noted. If the injury merited admission, dates of admission and discharge were also noted.

Based on the nature of injury, these cases were classified into – simple, grievous and dangerous. Injuries classified as grievous as per IPC 320 include those causing – permanent privation (loss) of sight of either eye, permanent disfiguration of head or face, fracture or dislocation of bone or tooth; or

five other factors. 'Dangerous injury' refers to injury that poses imminent danger to life by its direct or imminent effect. It is either extensive or serious in relation to organs or part wounded.^[2] Such an injury is likely to prove fatal in absence of surgical aid. The mode of injury was noted for each case. The sample cases were categorised as per Ocular Trauma Classification Group system, which has been presented below.^[3]

Here, Open Globe Injury (OGI) according to the Birmingham Eye Trauma Terminology (BETT) involves the total thickness of the eye wall: cornea and/or sclera. In Closed Globe Injury (CGI), eye wall does not have a full-thickness wound.^[4]

Type	Open-Globe	Closed-Globe
A	Rupture	Contusion
B	Penetrating	Lamellar laceration
C	Intraocular foreign body	Superficial foreign body
D	Perforating	Mixed
E	Mixed	N/A

Visual Acuity	Grade
≥ 20/40	1
20/50 to 20/100	2
19/100 to 5/200	3
4/200 to light perception	4
No light perception	5

Relative Afferent Pupillary Defect	Response
Present in the affected eye	Positive
Absent in the affected eye	Negative

Zone	Closed Globe Injury	Open Globe Injury
I	External (limited to bulbar conjunctiva, sclera, cornea)	Isolated to cornea (including corneo-scleral limbus)
II	Anterior segment (involving structures in anterior segment internal to cornea and including posterior lens capsule, also includes pars plicata but not pars plana)	Corneoscleral limbus to a point 5 mm posterior into sclera
III	Posterior segment (all structures posterior to posterior lens capsule)	Posterior to the anterior 5 mm of sclera

RESULTS

The sample size for the period under study is 196 patients. The results of the analysis of the case profiles can be summarized as follows -

Age and Gender Distribution

The sample consisted of 166 (84.69%) males and 30 (15.30%) female patients. The age distribution of the patients is tabulated below-

Age Group	Frequency	Percentage
0-20	36	18.36%
21-40	118	60.20%
41-60	38	19.38%
Above 60	4	2.04%

Bilateral involvement was found in 30 patients (15.3%).

Mode of Injury

Physical assault by the fist was the cause for trauma in a maximum number of cases, that is 101 (51.5%). Road Traffic Accidents (RTA) too had its significant share, with 64 patients (32.65%). Stone, wood, iron, chemical, gunshots and other modes had thinly distributed frequencies of 8, 4, 3, 4, 2 and 10 patients respectively.

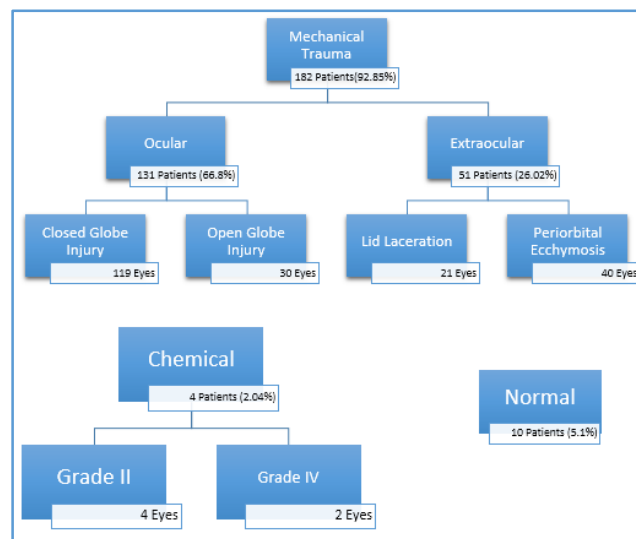
Place of Injury

With regard to place of injury, streets recorded the highest share of 116 cases (59.18%) followed by home with 59 cases (30.10%). Number of patients who sustained injuries in school were 3 (1.53%), at workplaces were 4 (2.04%) and at small factories were 6 (3.06%). All other places categorised as 'Others' recorded a share of 8 patients (4.08%).

Cases of Malingering

10 patients (5.1%) were found to have sustained no fresh ocular or orbital injury, perhaps, pointing to an instance of malingering. 9 of these patients had a normal ocular vision with 6/6 vision in either eye, while one patient claimed Glaucomatous Optic Atrophy to be caused by a mechanical injury.

Clinical profile of MLCs



Note- The classification of chemical injuries is as per the Dua classification system.^[5] Chemical injury was observed in 4 (2.04%) patients.

Mechanical Trauma

It was observed that 182 patients suffered mechanical trauma with ocular injury sustained by 131 patients (66.8%) and extraocular injury without damage to the globe by 51 patients (26.02%). A further scrutiny of the ocular injury cases revealed Closed Globe Injury (CGI) in 119 eyes and OGI in 30 eyes. Lid laceration accounted for extraocular injury in 21 eyes and periorbital ecchymosis accounted for the same in 40 eyes. At the time of presentation, 24 (12.2%) were found to be alcoholic.

History of other Associated Injuries

The forms of other associated injuries found in 76 patients are tabulated below in descending order of occurrence-

Sl. No.	Associated Injuries	No. of Patients
1	Laceration of face, scalp, neck	22 (11.2%)
2	Loss of consciousness	18 (9.2%)
3	Facial abrasion	16 (8.2%)
4	Epistaxis	12 (6.1%)
5	Multiple skull fracture	6 (3.1%)
6	Facial burns	2 (1.0%)

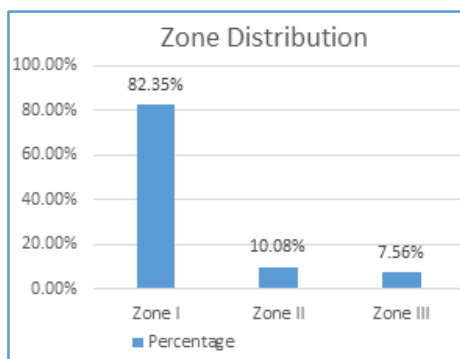
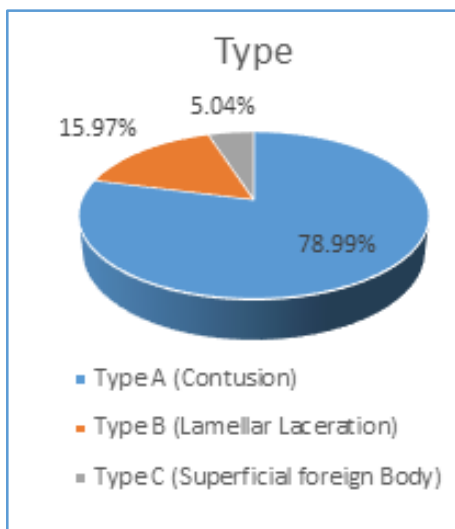
23 (11.73%) cases were graded as grievous injury. A dangerous injury was seen in 3 (1.53%) patients.

Type and Zone Distribution

Closed Globe Injury (CGI)

Of the 119 eyes that sustained CGI, 94 (78.99%) of these can be attributed to contusion (type A injury), 19 (15.97%) to Lamellar laceration (type B injury), and 6 (5.04%) to Superficial Foreign Body (type C injury). Zone I involvement was the highest with 98 eyes (82.35%), followed by Zone II involvement in 12 eyes (10.08%) and Zone III involvement in 9 eyes (7.56%). 7 eyes (5.88%) showed positive RAPD.

With regard to visual acuity based on Snellen 6m chart, 83 eyes (69.7%) had a VA exceeding 6/12 (Group I), 12 eyes (10.08%) had VA in the range of 6/18 – 6/36 (Group II), 9 eyes (7.56%) had VA of 6/60- counting fingers (Group III), 10 eyes (8.4%) responded correctly to hand movement- light perception (group IV) and 5 eyes (4.2%) had no light perception (group V).

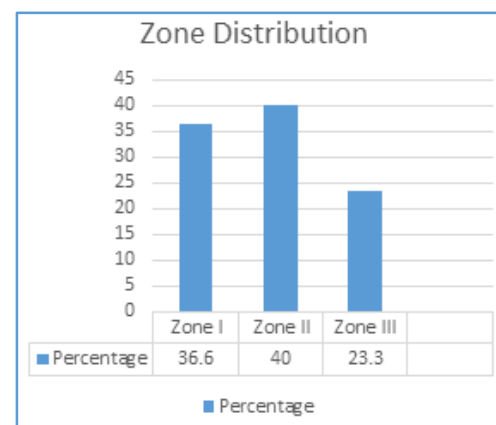
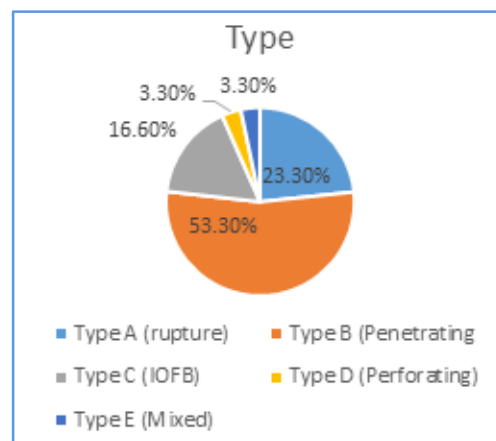


Visual Acuity Results (CGI)

Groups	No. of Eyes
I ($\geq 6/12$)	83 (69.7%)
II (6/18- 6/36)	12 (10%)
III (6/60- counting fingers)	9 (7.56%)
IV (hand movement – light perception)	10 (8.4%)
V (no light perception)	5 (4.2%)

Open Globe Injury

Of the 30 eyes that sustained OGI, 7 (23.3%) of these can be attributed to Type A injury (rupture), 16 (53.3%) to Type B (penetrating), 5 (16.6%) to Type C (IOFB), 1 (3.3%) to Type D (perforating) and 1 (3.3%) to Type E (mixed). With regard to zonal distribution, Zone I involvement could be found in 11 (36.6%) eyes, Zone II in 12 (40%) eyes and Zone III in 7 (23.3%) eyes. The presence of RAPD was detected in 11 (36.6%) eyes. With regard to VA, 2 eyes (6.66%) had VA equal to or exceeding 6/12 (Group I), 1 eye (3.3%) had VA in the range of 6/18- 6/36 (Group II), 3 eyes (10%) had VA of 6/60-counting fingers (Group III), 14 eyes (46.6%) had VA of hand movements – light perceptions (Group IV) and 10 eyes (33.3%) had no light perception (Group V).



Visual Acuity Results (OGI)

Groups	No. of Eyes
I ($\geq 6/12$)	2 (6.66%)
II (6/18- 6/36)	1 (3.3%)
III (6/60- counting fingers)	3 (10%)
IV (Hand movement – light perceptions)	14 (46.6%)
V (No light perception)	10 (33.3%)

Extraocular Injuries- Lid Laceration and Periorbital Ecchymosis

Extraocular injury without the involvement of the globe accounted for mechanical trauma in 51 patients. For these, X-ray orbit and whenever needed, CT scan was advised. 21 of these eyes had lid laceration- with some having partial and others, full- thickness laceration; in some, laceration could be found on the upper lid, and for some on the lower lid. Periorbital Ecchymosis was found in 40 eyes. 4 patients sustained chemical injuries. Grade II chemical burn was detected in 4 eyes and Grade IV chemical burn in 2 eyes. Acid was the sole chemical found to be responsible for all these cases.

DISCUSSION

Given the critical nature of these cases, the All India Ophthalmological Society rightly acknowledged the need to create greater awareness of the legal aspects involved, among ophthalmologists.^[6] This is vital not only to facilitate a smooth treatment procedure, but also because myriad implications stretching across legal, social and economic domains, maybe contingent on how the ophthalmologist handles these cases.

The AIO details some guidelines on the procedures to be followed when dealing with MLCs. Of particular importance is the Medico-legal report that demands proper scrutiny and documentation. Given that such a report can be legally admitted in a court of law as medical evidence, establishing credibility requires it to be organised, elaborate, accurate and free of bias. The indispensable features of documentation include the VA, intraocular pressure and a drawing of the wounds.^[7] It is important in such cases to exercise prudence. Opinions should not be hasty ones and should be offered upon completion of all relevant tests. When dealing with cases of trauma by assault, the injuries need to be noted in detail in a separate MLC register detailing its nature (simple, grievous, dangerous) and amount of loss of vision. The medico-legal report should also detail the investigations conducted, the treatments given and the results obtained. It is imperative that such reports be kept concise and comprehensible, carry the signature of the doctor in each of the pages and contain all basic information such as date, time, place of examination, details of accompanying person, etc. The record should be kept for 3 years or till the time the case has been decided by the court.^[8]

Consistent with sex distribution found in previous studies, this study also found a high male to female ratio (83:15). With regard to age distribution, existing literature indicates that the injured are concentrated in the younger age groups with the mean age generally found in the 30s. This study conforms to the trend, as 60.2% of the patients were found to belong to the 21-40 age group.

Lid laceration and Periorbital Ecchymosis accounted for extraocular injury in 26.02% of the cases – possibly indicative of fist as the mode of injury. Road traffic accidents (RTA) accounted for a significant number of patients 64 (32.65%). This was much higher than the findings of Tripathy et al (2016). 5.1% of the cases were found to have sustained no fresh Ocular injury. Upon further examination, they were found to have normal 6/6 vision in either eye. It is not uncommon to encounter such malingerers who register themselves as MLCs with the hopes of receiving monetary

compensation. It is therefore imperative that these claims are rigorously verified through careful examination and any evidence of malingering is properly documented.

In CGI, the most common form found was contusion. Zone I involvement was the highest- 98 eyes (82.3%); and the typical form was found to be subconjunctival haemorrhage. VA distribution revealed maximum patients concentrated in Group I ($\geq 6/12$) which indicates the absence of significant posterior segment trauma. Moreover, CGIs are hardly a cause for media opacities. Among cases classified as CGI, RAPD was found positive in 7 eyes (5.88%). The sole cause for the same in each of these was post-traumatic optic neuropathy.

An analysis of OGI cases reveals that penetrating (Type B) injury is the most common with a share of 53.3%. Zone I and II recorded the highest shares with the combined aggregate share being 76.6%. VA tests for these cases, also yielded poor results, with most of the patients concentrated in Group IV (hand movements-light perception) and V (no light perception). The brightest illumination of indirect ophthalmoscope was used for the examination of light perception. The evidence of NLP in these cases was supplemented by consensual pupillary response to light in the fellow eye.

Around 26% of the patients sustained extraocular injury- lid or orbital trauma. Orbital X-ray yielded 'normal' result for these cases. However, in comparison to CT scan, this test is relatively less credible as a certain proportion of orbital fractures (approximately 22-36%) may escape detection.^[9,10]

CONCLUSION

In the study, ocular injury was found to be the most common form of mechanical trauma; within that, the presence of CGI was found to be significantly higher than that of OGI. With regard to zonal involvement, Zone I recorded the highest share in CGI and Zone II in OGI. In CGI most cases had good presenting vision; but in OGI, many cases had lost the perception of light. Data also points to Road Traffic Accidents (RTA) and streets being the common mode and place of injury respectively. This could possibly reflect a culture of poor traffic regulation and the high frequency of these accidents, perhaps, stems from the presence of a large number of speeding two-wheelers common in the town. Alcoholism was also an important factor for the genesis of various accidents. The study also encountered evidence of malingering stemming from monetary incentives, which points to the vital need of proper examination and documentation and a comprehensive understanding of the legal aspects involved in these cases.

ACKNOWLEDGEMENTS

The authors acknowledge the support and assistance provided by Bhargavee Das and Neermalya Pratim Das without which the paper would not have been completed within the limited timeframe.

REFERENCES

- [1] Medicolegal. 2 March 2016. In Wikipedia. <https://en.wikipedia.org/wiki/Medicolegal>
- [2] Bardale R. Principles of forensic medicine & toxicology. https://books.google.com.au/books/about/Principles_of_Forensic_Medicine_Toxicolo.html?id=yPwGPPo9Ex9IC

- [3] The System of the Ocular Trauma Classification Group for classifying mechanical injuries to the eye September 15, 2010. In medal military medicine. <http://www.mymedal.org/index.php?n=Military.190704>
- [4] Paciuc M, Dalma-Weiszhausz J, Phan R, et al. Trauma: open-globe injuries. American Academy of Ophthalmology 2015. <https://www.aao.org/pediatric-center-detail/open-globe-injuries>.
- [5] Dua HS, King AJ, Joseph A. A new classification of ocular surface burns. Br J Ophthalmol 2001;85(11):1379-83.
- [6] Verma L. Legal aspects in Ophthalmology. In All India Ophthalmological Society, 2013. <http://www.aios.org/cme/cmeseries27.pdf>
- [7] Tripathy K, Chawla R, Venkatesh P, et al. Clinical profile of medicolegal cases presenting to the eye casualty in a tertiary care center in India. Indian Journal of Ophthalmology 2016;64(6):422-6.
- [8] Das C. Medico legal case management. <https://www.slideshare.net/NcDas/medicolegal-case>
- [9] Iinuma T, Hirota Y, Ishio K. Orbital wall fractures. Conventional views and CT. Rhinology 1994;32(2):81-3.
- [10] Kubal WS. Imaging of orbital trauma. Radiographics 2008;28(6):1729-39.