

## A Simplified Classification of Ocular Trauma

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### Abstract

Classification of a disease is meant for understanding a disease in its manifold expressions. It is also necessary to compare and contrast our work with fellow colleagues. A very simple type of classification is easy to follow but usually it is not scientifically very adequate. Similarly a detailed classification may theoretically be easy to follow but is it is difficult and time taking to carry out in practice. Thus a middle type may be quite useful particularly if large number of volunteers and studies are not available. Kuhn's classification is very simple and very popular but misses many things. Shukla et al made a better classification but made it a little long and hence could not become very popular. The present classification is an attempted answer to the above problem.

**Keywords:** Ocular Trauma; ophthalmology; Eye Ball

### Introduction

In all medical sciences definition and classification are very important and necessary for understanding a subject. Ocular trauma or eye injuries have become of late a very important subject in ophthalmology. Till late acute closed angle glaucoma and ocular trauma (eye injuries) were the only ocular emergencies. Acute glaucoma can now be well controlled by topical or systemic medicines or even by surgeries. Thus ocular trauma remains the only emergency in ophthalmology. Which is on increase due terrorism, number of risky games, vehicular congestion and accidents on roads, risky games and criminal attacks of various kinds.

### Review of Literature

As the name suggests the eye is a globular structure like a ball. A ball could be solid or empty and filled with air or fluids of different kinds. Eye ball contains a combination of watery fluid, viscous material and semisolid structures. The basic pathology in eye injury is involved in the integrity of its outer coverings which in common

terms we express as perforation or non perforation. This is of paramount importance as after a perforation there is escape of fluid or viscous material leading to fall in the intra-ocular pressure and a change in the shape of the eye ball. More importantly there are increased chances of infection after perforation. So the earliest classification of ocular trauma was of perforating and non-perforating types [1]. Other problems included the variation of description of various pathologies like penetration, perforation, tear, abrasion, laceration, rupture. Hence due to a little confusion about the terminology there was confusion about the diagnosis and comparison of different studies was not possible.

### Recent Classifications

In 1995 Kuhn et [2-4] defined various terms used in connection and also made a classification which became very popular and which is in use even now. They divided all ocular trauma cases as open globe or closed globe types. Closed globe included contusion and lamellar laceration whereas open globe included laceration

due to outside in mechanism and rupture due to inside out mechanism. The former is usually caused by sharp or pointed structures whereas the latter is by a forcible blunt trauma. Laceration included penetration, perforation and intra-ocular foreign bodies. This has certainly improved our understanding the mechanism of ocular trauma. There are many reports based on this classification.

**Current classifications**

Kuhn's Classification		
Open Globe	Closed Globe	
Contusion	Rupture	Penetration
Lamellar Laceration	Perforation	I.O.F.B.

**Table 1**

Though this classification is simple and user friendly it has a few disadvantages which can not be over looked. The word laceration has been defined as a full thickness wound of eye ball and penetration as a single laceration which makes no significant difference. Perforation has been defined as two lacerations, one of entrance and one of exit which actually points at double perforation. These definitions need revision.

The distinction between global and ocular has not been made. Globe is synonym with eye ball but ocular includes the adnexal structures also which has not been considered in the present classification. Similarly in this classification only mechanical injuries are non-mechanical have not been considered.

Shukla [4] has published a new classification of ocular trauma where most of the errors of commission and omission have been eliminated. Ocular trauma is not a disease of eye ball alone but all other surrounding structures like eye lids, orbit, lacrimal apparatus and conjunctiva which have not been considered previously. Further so far only mechanical injuries were considered and many non-mechanical injuries were also left out which were included in the new classification. Though this classification has eliminated all the drawback of the earlier classification it is too detailed and hence not very suitable for epidemiological studies or for use in ordinary eye clinics. Further many cases include young children<sup>5</sup> and for them a very detailed examination becomes rather difficult. Examination under anesthesia is doubt best but may not be very safe in all cases and needs additional help of an anesthetic.

**Need for a classification for children and for epidemiology**

It may be pointed out that though blindness is a curse for every one irrespective of age, social status or occupation, it has been well emphasized that blindness in a child of 5 years is as bad as blindness in 10 persons of 50 years age. The period from birth to 15 years is most important in human life. Examination of child is by no means an easy task and a lot of temptation and trick is needed to handle a child particularly for doing an eye examination which for obvious reasons he resists. Number of well trained medical and paramedical staff is needed for this purpose. Still nearly 70% of Indian population is in villages. Hence a relatively simpler classification for ocular trauma is required to pick up cases for reference to an eye specialist or a big eye center. With this in view we have tried to develop a simpler classification for this purpose which may be termed a Pediatric or Epidemiological Ocular Trauma Classification which could be conducted by a trained paramedical staff also.

**Ocular trauma classification**

Ocular		With extra-ocular	
Mechanical		Non - mechanical	
Global	Adnexal	Chemical	Head
Open	Orbital	Thermal	Face
Closed	Palpebral	Radiational	Body
Destruct.	Lacrimal	Electrical	
	Conjunctival		

**Table 2**

**Discussion**

Ideal is rarely practical. So quite often we have to make a compromise. A detailed classification is no doubt useful but in many it is not practical with the circumstances. Classification by Kuhn et al<sup>1</sup> was sweet and simple and hence it lasted so long. However, it omitted many important issues. Though the initial classification by Shukla et al<sup>4</sup> was quite elaborate and accurate it was not very practical the examination of children and for survey purpose where large population has to be examined by quite often by a paramedical staff. Hence it was thought to make a compromise and make a more practical classification.

This is relatively simple and easy to follow even by a trained paramedical staff who are often needed for a survey work particu-

larly in rural areas. So also in children we hope it would be found more useful and practical.

### Conclusion

As mentioned earlier, it is not easy to make an ideal classification of a disease. Both too long or too short classification may have problems. Perhaps a middle one may be of more practical use without losing essential features. The present paper is an attempt for the same. It may be particularly useful in case of children and in smaller epidemiological studies.

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