

## Indian Supplement Editorial Board

Dr Damodar Bachani      Dr Parikshit Gogate  
Dr GVS Murthy            Dr Praveen K Nirmalan  
Dr GV Rao                 Dr BR Shamanna  
Dr Asim Kumar Sil

Published for "Vision 2020: The Right to Sight - India Forum" from International Centre for Advancement of Rural Eye Care, L V Prasad Eye Institute, Banjara Hills, Hyderabad 500 034, India. E-mail: JCEH-India@icare.stph.net

Editorial Assistance: Dr Usha Raman, Mr Sam Balasundaram, Ms Sarika Jain Antony

## Primary prevention of red eye in the Indian context

### Asim Kumar Sil

Chief Medical Officer, Netra Niramay Niketan  
Vivkenanda Mission Ashram, Chaitanyapur, West Bengal, India

### Introduction

Redness of the eye is a matter of great concern for every individual. A red eye is an outward expression of a wide range of ocular and some systemic conditions. Many conditions are transient, self-limiting and resolve without any permanent damage to the eye or vision. We are more concerned about the conditions that can lead to loss of vision. Many red eye conditions can be prevented.

### Red eye and the danger of visual loss: the Indian context

In India, red eye can lead to visual loss due to several reasons, as listed below.

**Application of native medicine:** Among many traditional communities, people do not consult a qualified doctor for red eye. They may try to apply a locally available native remedy, which may produce a corneal ulcer and ultimately lead to visual loss.

**Attempt to remove a foreign body:** People who work as in stone crushers or those who work with metal may suffer from a foreign body in the eye. They may ask someone to remove the particle, or may try to do it themselves using a piece of paper (even currency notes are used) or cloth. This unskilled approach injures the corneal epithelium.

**Self-medication with steroid:** Steroid eye drops are widely available over the counter in Indian cities and even villages. Unsupervised use of such steroids may lead to the development of corneal ulcers. Long-term unsupervised use of steroid for allergic conditions sometimes leads to development of cataract and glaucoma.

**Delayed treatment:** Many people do not have access to eye care and eyes are lost without proper treatment. Lens induced glaucoma and primary angle closure glaucoma are treated very late on many occasions.

**Cost of therapy:** The cost of therapy may be perceived as prohibitive by some patients. Treatment of infective keratitis, particularly fungal keratitis, is expensive.

### Primary prevention of red eye in the Indian context

**Health education:** The following measures can help minimize some of the causes of red eye.

- Use of protective glass at the time of stone crushing, using lathe machine, welding, threshing paddy with a machine.
- Use of protective headgear or visors while playing sports like cricket.
- Personal practice of strict hygiene and avoidance of contact by those who have conjunctivitis

- Avoiding the use of harmful traditional eye medicines.
- Awareness about the dangers of using steroids

**Training of primary health workers, Anganwadi workers, and birth attenders:** Creating awareness among these groups of workers could help prevent or reduce ophthalmia neonatorum, whooping cough and measles. They can ensure immunization and educate mothers about healthy practice.

**Training traditional healers:** In many parts of the world medical care depends to a great extent on the attitudes of local opinion leaders. They should be educated about prevention and timely referral of red eye conditions.

**Other measures:** In addition, Primary Health Centres and Vision Centers should be equipped with the knowledge and materials to treat cases of red eye. At the very least a supply of antibiotic ointment



Fig 1. Sub-conjunctival haemorrhage in whooping cough (AK Sil)

should be ensured. Occupational safety is very essential, particularly in chemical industries. Workers and employers should be educated so that the safe practices are ensured. Timely cataract surgery can prevent many cases of visual loss from lens-induced glaucoma. This is still a significant problem in the developing world. Glaucoma awareness can prevent visual loss. Every individual should be encouraged to have an eye check up once a year after the age of forty. They should be made aware of symptoms of glaucoma. Women should be specially targeted. Immunization against Whooping cough and measles are included in Immunization programme. This should be ensured by Health workers and Anganwadi workers. Vitamin A supplementation should be regular. SAFE strategy for trachoma should be followed where it is prevalent. In leprosy, lagophthalmos should be promptly treated.

## Sources

Seimon CR. Ophthalmology without tears - A problem solving manual. Sri Lanka Eye Foundation 2000.

Gold DH, Lewis RA. Clinical eye atlas. American Medical Association, AMA Press: 2002.

Roy FH. Ocular differential diagnosis, 6<sup>th</sup> Edition. Lippincott, Williams & Wilkins 2001.

American Academy of Ophthalmology. External disease and cornea -Basic and clinical science course, 2001-2002. American Academy of Ophthalmology.



Fig 2. Pigmentary fungal keratitis (AK Sil)

# Eye safety and prevention of visual disability in the paediatric age group

**Jitendra Jethani & P Vijayalakshmi**

Aravind Eye Hospital, Madurai- 20  
Tamilnadu, India

## Introduction

Children and adolescents account for a disproportionate share of ocular injuries. The majority of these injuries are related to unsupervised and dangerous activities. These injuries can be devastating and a significant cause of visual impairment in most of these children. The majority of eye injuries both in children and adults are accidental; some predictable and preventable at various levels<sup>1</sup>. In India, ocular injuries have been identified as the major cause of acquired monocular blindness<sup>2</sup>. Aside from the obvious ramifications of vision loss, significant problems also arise like cosmetically unacceptable corneal scar, strabismus, loss of binocularity in unilateral injuries, phthisis bulbi, or absence of eyeball necessitating rehabilitation.

## Causes at various ages

1. Prenatal period: Contrary to the popular belief, ocular injuries can occur to a foetus *in utero*. Cases have been reported of such injuries being iatrogenic. A spectrum of eye injuries can occur in association with amniocentesis. They include non-pigmented iris cysts, hemianopia, gaze palsy, chorioretinal scars, leucomas,

leucocoria, third nerve palsy and congenital blindness. Real time USG monitoring of the amniocentesis needle may help avoid this injury<sup>3,4</sup>. Ocular adnexal injuries like lid lacerations occur rarely during episiotomy or with the surgical knife during delivery with caesarean section has been noted<sup>5</sup>. Direct trauma from forceps compression during delivery may cause intraocular hemorrhage, Haab's striae and corneal scarring which could definitely be avoided with the proper planning before the injury.

2. Infancy and Toddler Period: The most common ocular injury during the early months of life is corneal scratches (abrasions) from their own fingernails, siblings or parents. Another common entity we come across is injury with the metal hook of the mother's blouse while feeding the child resulting in injuries and the bindi (applied on forehead by mother) getting lodged in the fornix causing severe kerato-conjunctivitis. Alkali burns due to lime are very common in India. Most of the cases are victims of the plastic pouches containing lime, used commonly by their guardians for chewing betel leaves. Also injuries by accidental spill of raw soap nut powder, detergent powder and liquids, hot water or soups are seen invariably resulting in conjunctivitis and at times keratitis.

Though, child abuse is attributed as a cause of ocular injury resulting in retinal hemorrhages in western population, this is reported very rarely in our country.

3. Older Children: Young boys are more frequently injured than girls, since they are more active in indoor and outdoor activities as they proceed beyond early childhood. Thorn pricks, sharp injuries from geometry instruments, and animal bites, particularly of dogs, bird beak injury and other animal pets<sup>4</sup> may occur.

## Why children are more prone?

Several factors place the child at particular risk for a serious accidental eye injury<sup>6</sup>.

1. Age: Children aged between 0 and 5 years of age are probably at greater risk for serious eye injury than older children because of their relative inexperience, natural curiosity and immature motor skills making them more vulnerable.
2. Anatomically, children's eyes are more forwardly displaced and exposed because of relatively flat features.
3. For obvious reasons, the recognition of ocular injuries is often delayed in children with the added difficulty a child faces in communicating the nature and extent of injuries.

Table: Strategies at different workplaces to prevent eye injuries. The workplaces have been divided into household activities, at school and sport activities.

At home	
Host related	<ul style="list-style-type: none"> <li>• Being more cautious especially for infants and toddlers</li> <li>• Education regarding eye safety</li> <li>• Supervised risk activities</li> <li>• Proper trimming of nails of both the infant and the caretakers at periodic intervals</li> </ul>
Agent related	<ul style="list-style-type: none"> <li>• Only those toys and crackers that are appropriate for the age should be purchased</li> <li>• Toys made of scrap metal should be avoided</li> <li>• Toys having pointed sides that are inherently dangerous should be avoided</li> <li>• Tools should be kept in a secure place out of reach of children</li> </ul>
Environment related	<ul style="list-style-type: none"> <li>• Learning driving and burning crackers under supervision</li> <li>• Aggressive behavior should be discouraged and controlled</li> <li>• Importance of protective eyewear should be stressed</li> </ul>
At school	
Host related	<ul style="list-style-type: none"> <li>• Stressing the importance of eye safety</li> <li>• Importance of protective eyewear should be stressed</li> </ul>
Agent related	<ul style="list-style-type: none"> <li>• Eye wear should be checked</li> <li>• During laboratory experiments, protective eyewear should be made mandatory</li> <li>• Workshop eyewear usage should be mandatory</li> </ul>
Environment related	<ul style="list-style-type: none"> <li>• Aggressive behavior should be curbed</li> <li>• Corporal punishment should not be practised</li> <li>• A first aid kit and its usage should be impressed upon the students</li> </ul>
For sports	
Host related	<ul style="list-style-type: none"> <li>• Sports should be played in the spirit of sportsmanship</li> <li>• Aggressiveness outside the game should be curbed</li> </ul>
Agent related	<ul style="list-style-type: none"> <li>• Proper protective eyewear should be available especially for one eyed children</li> <li>• The sport should be played using the proper technique, not with home made material or pieces of scrap which could be dangerous</li> </ul>
Environment related	<ul style="list-style-type: none"> <li>• Equipment like bows and arrows should be avoided</li> <li>• Protective eye wear should be worn.</li> <li>• Proper usage and maintenance should be followed especially for one eyed children</li> </ul>

4. Associated presence of malnutrition, vitamin 'A' deficiency, delayed milestones also contribute to the severity of injuries because of a decompensated cornea or blepharitis.

### One-eyed children

Children who have visual impairment in one eye either because of injury or other causes are more in danger of sustaining injury in the other eye, and hence identifying one eyed individuals and teaching eye

safety is mandatory for this group. Because children are more vulnerable to the possibility of eye injuries, protection of their "good eye" is absolutely essential.

### So how do we address this problem in children?

i. Awareness: The first step is to build awareness at family level, schools and at various workplaces to understand the preventive aspects better.

ii. Primary care: Immediate primary care should be provided to the ocular injuries, so as to protect the injured ocular structures and prevent them from getting infected. General practitioners or primary health care workers should be trained to handle ocular injuries and must be able to recognise the importance of prompt referral.

iii. Safe play tools: While playing with the self made bows and arrows with broomstick, there is a high risk of perforating injuries.

iv. Sparing use and needed distance from crackers and fireworks: There is nearly two-fold increase in the number of eye injuries in patients during festivals like Diwali due to the firecrackers.

v. Video display terminals (VDTs), computers and televisions: Although there have been many complaints of eye discomfort and fatigue following the use of VDTs, there is no convincing scientific evidence that they are in any way hazardous to the eyes.

vi. Abolition of child workers/ safety devices for occupational injuries: Gem polishing is an industry that produces frequent minor injuries to its workers, many of whom are minors.

### What else can be done? Prevention is better than cure

Factors responsible for the injury have been divided into: agent (due to some object), host (child related) or environment (due to social or physical interaction) related<sup>2</sup>. The division is important from the prevention point of view (Table) as this helps in proper application of preventive measures at various levels. Although it is difficult to prevent host related injuries, they can be minimized. Safe toys and legislation to tighten toy safety standards must be passed and the toys that pose a potential eye hazard must be labeled with an "eye watch" sign like the choking hazard sign on many toys.

### Protective eye wear

There are various types of protective eyewear which have been recommended for sports wear; however for everyday protection, impact resistant spectacles consisting of sturdy frames with industrial-strength lenses are usually sufficient. When vision is impaired in one eye, some type of protective eyewear will be necessary for the other eye through the individual's lifetime.



Fig 1. Hazy cornea is seen as a result of severe corneal burns due to lime. Also the conjunctiva in the paralimbal area rich in stem cells is damaged

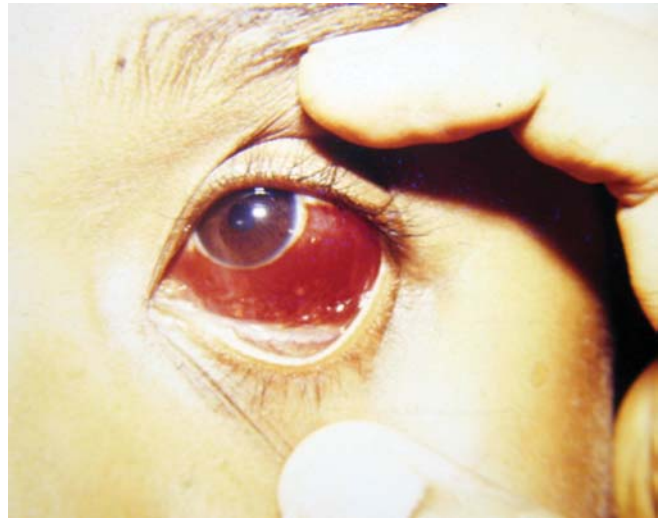


Fig 2. Subconjunctival haemorrhage with no rupture in the globe; a result of blunt trauma

In conclusion, there are certain points to ponder:

- Some ocular trauma in children will occur at random and uncontrolled basis; sports are a major cause. However, 90% of such injuries are thought to be preventable with the use of protective eyewear.
- Stressing eye protection at home may seem less important than in areas where injuries are commoner but home seems to be a better place for learning and understanding the need for prevention of injuries, under the supervision of parents.
- Preventing aggressive behavior goes a long way in preventing injuries from assault, dangerous play and other sports related injuries.
- Policy and legislation is an important intervention through societies like the All India Ophthalmological Society and Indian Academy of Paediatrics for issuing strong recommendations for protective eyewear for all functionally one-eyed individuals.
- Immediate attention to the ocular injuries should be towards protecting the injured ocular structures anatomically and preventing them from getting infected.
- The ophthalmic community should take the responsibility to educate the community in this regard as a part of practice protocol.

### References

1. AAP: Policy statement: Office based counseling for injury prevention. Committee on injury and poison prevention. San Francisco. AAO, Oct 4, 1994
2. Vasnaik A et al. Mechanical eye (globe) injuries in children. J Pediatr Ophthalmol Strabismus 2002; 39 :5-10
3. Neill JF. Eye safety in pediatric population. Ophthalmology Clinics of North America 1999; 12 (3): 413-19
4. Hershey D. Ocular injury from amniocentesis Ophthalmology 1993; 100: 1601-2
5. Dorfman MS, Benson WH. Marginal eyelid lacerations after episiotomy Am J Ophthal 1993; 16: 778
6. McDonald M, Burgess S. Contralateral occipital depression related to obstetric forceps injury to the eye Am J Ophthal 1992; 114: 318-21

## VISION 2020 - INDIA Forum Activities (January - March 2005)

The VISION 2020 - INDIA Forum has started playing a strong advocacy role in India not only to build awareness in various sectors (NNGOs, INGOs, Corporate and the Government) but also to help different State Governments develop state plans with support. Progress on this front was made in Karnataka, Gujarat, Maharashtra and Tamil Nadu.

The forum has also facilitated the development of manuals and guidelines for various activities of the VISION 2020: The Right to Sight - INDIA Forum.

This quarter, three workshops were organized in Kolkata and New Delhi with partner organizations, to boost the initiatives of VISION 2020: The Right to Sight - INDIA Forum. The main objectives were to assess childhood eye problems in the northeast of the country and to develop strategies to address them; to debate on national issues related to childhood blindness and develop standards for addressing them; and to strengthen programmes addressing corneal blindness and the eye banking movement within the country. This quarter has certainly seen an increase in the level of cooperation and cohesiveness among stakeholders.



**L V Prasad  
Eye Institute**  
Hyderabad, India



Supported by  
**ORBIS**  
International  
India Country  
Office