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# Systematic approach to *Nayanabhighata* w.s.r. to ocular trauma

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## ABSTRACT

It is said that if vision is lost the whole world becomes blind for that person. Hence for every individual protecting his sense of vision is very important for his existence. *Acharya Sushruta* has contributed more with regards to *Nayanabhighata*. Many *Acharyas* explain the treatment methodology which is useful for *Nayanabhighata* since *Vedic* periods as we have reference of replacement of injured eye with artificial eye in *Rigveda*. For treating the *Nayanabhighata*, many *Kriyakalpas* are used extensively which are mentioned in *Shalakyatantra* which are basic treatment modalities. Ocular trauma is a term given to an eye injury that occurs because of direct blow to the eye. The magnitude varies from a normal black eye to sport injury to a serious case of blood collection between the cornea and iris. The classification, site of injuries of ocular trauma are discussed in this.

**Key words:** *Nayanabhighata*, *Kriyakalpas*, *Ocular trauma*.

## INTRODUCTION

A statement in *Charak Samhita* states “*Nashta Drik Kudya Sannibha*” implies that even though a man is having all *Indriyas* but not the *Netra* is just as insect without any use. In this era of high-speed traffic and industrialization the incidence of injuries is increasing in general like any other part of the body eyes are also not exempted from these injuries.

Ocular injuries are a major health problem in India. Blunt trauma being one of the important cause of the

ocular morbidity and blindness. The children at play, young men at work, in factories and construction sites, road side falls, high speed travel and road traffic accidents, sport injuries, fall upon projecting blunt injuries and in a rural set up like ours agricultural based injuries are the causes of minor and severe blunt injuries. Ocular trauma is a major cause of preventable monocular blindness and visual impairment in the world, especially in the developing countries.<sup>[1]</sup>

Trauma to the eye and adjacent requires meticulous examination to determine the extent of injury range of extra ocular muscles and extent of injury to the anterior and posterior segment of the eye.

## AIM AND OBJECTIVES

1. To understand the *Nidana*, *Lakshana* and *Chikitsa* of *Nayanabhighata* described by various *Acharyas* in *Ayurvedic* classical text.
2. To understand the causes and various types of ocular trauma and their preventable measures.

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**EPIDEMIOLOGY**

Ocular trauma is one of the main causes of severe ocular morbidity. Globally more than 55 million eye injuries occur per year, while there are approximately 1.6 million people with blindness from ocular trauma, 2.3 million people who are bilaterally visually impaired and 19 million people with unilateral blindness or visual loss.<sup>[2]</sup>

**Definition of Nayanabhighata<sup>[3]</sup>**

*Nayana* is derived from the word “*Neeyate drushti vishayo anena iti*”, which means the object of perception. *Abhighata* is derived from the word ‘*Dandadibhir Abhighata Aaghata*’

This means physical assault. But while explaining *Nayanabhighata*, Acharya Dalhana considers both physical as well as psychological causes for *Nayanabhighata*.

**Nidana of Nayanabhighata<sup>[4-7]</sup>**

Acharya Videha quotes *Nidanas* for *Abhighata* as

1. Application of strong collyrium for exhausted, exposure to wind, sun, fumes, dust, insect bites, playing watergames, night awakening, fasting, exhausted physically, fearful.
2. Acharya Vagbhata while explaining *Upaghataja Timira* states *Nidana* as
3. Exposure to sunlight, wind, thunders are the causes for traumatic cataract.
4. Acharya Yogaratnakara and Chakrapani states, exposure to sunlight, thunders, excessive sudation, fumes, fear and sadness causes injury.

**Yantrik Abhighata**

This is considered as *Agantuja Netra Roga Nidana*.

It is of two types: *Sachidra* (Perforating and penetrating injuries) and *Achidra* (Blunt injuries).

**Lakshanas of Nayanabhighata<sup>[8]</sup>**

*Samrambha* (slight inflammation), *Raga* (redness), *Tumula* (constriction), *Ruja* (pain).

Reference of inhalation injury: *Chakshusho Paridaha* (burning sensation) and *Netraragata* (redness) under *Dhumopahata Lakshanas*.

**Nayanabhighataa Chikitsa<sup>[9-11]</sup>**

According to Acharya Sushruta

In the treatment of *Nayanabhighata*, *Nasya* (nasal medication), *Alepa* (external application), *Parisechana* (irrigation), *Tarpana* (Nourishing therapy) should be used like in treatment of *Raktabhishyanda* and *Pittabhishyanda*.

*Kshataja Shula Pathya* and *Pittaja Shula Pathya* (should follow the instructions mentioned under *Kshataja Shula* and *Pittaja Shula*).

*Drushti Prasad Janana* (which helps to increase vision), application of *Snigdha* (oleating), *Hima* (cold), *Madhura Dravyas* (Sweet potent drugs).

The above mentioned procedures should be adopted immediately after injury and later on *Abhishyanda Chikitsa* has to be adopted according to *Dosha Anubandha* (depending on *Doshas*).

In case of minor trauma to the eye, the pain rapidly disappears a *Aasyabhaspam mukhaphutkara janitoshnam* ( fomentation from the vapours of the mouth).

In cases where the eyeball is pushed deep into socket, it should be made to bulge out by holding the breath, inducing vomiting, sneezing and pressure over the throat.

In cases, where the eye ball is protruding from the socket, treatment includes combined deep inspiration and also with *Sheetala Jala Parisheka* (irrigation of the head with water).

**According to Acharya Chakrapani**

**Madhukadya Ghritam:** Goats ghee cooked with milk along with the *Kalka* of *Madhuka*, *Utpala*, *Jivaka* and *Rishabhaka* is useful in all types of eye injuries.

**According to Yogaratnakara, Chakrapani**

Eye drops prepared from powders of *Haridra*, *Mustaka*, *Triphala*, *Daru*, *Sarkara*, *Madhuka* mixed with breast milk removes pain.

**Trauma to the Globe<sup>[12]</sup>**

Trauma to the globe is divided under 6 sections

1. Blunt trauma
2. Penetrating trauma
3. Enucleation/evisceration
4. Superficial foreign body
5. Intraocular foreign body
6. Bacterial endophthalmitis

**1) Blunt Trauma**

Sport injuries and assault are common causes for blunt trauma. Retrobulbar haematoma and globe rupture are two major entities of blunt trauma. Vision loss, eye pain, eye deformity are typical symptoms of the blunt trauma. Increase of IOP is occurred after severe blunt trauma. The extent of ocular damage depends on the severity of the ocular trauma.

Here are some deformities formed after blunt trauma to the eye,

1. Cornea: corneal abrasion and acute corneal oedema, sometimes trauma is associated with endothelium and descemet membrane.
2. Hyphaema: Haemorrhage in the anterior chamber
3. Iridocyclitis: Iridocyclitis is a dehiscence from the ciliary body at root.
4. Increased IOP: If the intraocular pressure is low in the presence of full hyphaema an occult posterior scleral rupture should be suspected.
5. Cataract: Commonly opacification occurs in the posterior subscapular cortex resulting into flower shaped (rosette) opacity.
6. Globe rupture: The rupture is usually anterior, An anterior rupture is masked by extensive sub conjunctival haemorrhage. An occult posterior damage can be associated with vision loss. The rupture is often found slightly behind the insertion of rectus muscle where sclera is thinnest.

7. Vitreous haemorrhage: It occurs in association with posterior vitreous detachment. Pigment cells (tobacco dust) can be seen floating in the anterior vitreous.
8. Commotio retinae: Commotio retinae is caused by concussion of the the sensory retina resulting in cloudy swelling that gives a greyish appearance
9. Choroidal rupture: Choroidal rupture involves the choroid, bruch membrane and retinal pigment epithelium.

**2) Penetrating Injury**

Penetrating eye injury/trauma can be prevented by the appropriate use of the protective eyewear. Sharp objects such as knives cause well defined cut in globe, the extent of the penetrating trauma can be determined by the kinetic energy of objects.

- a) Corneal trauma includes small shelving and medium sized wounds. In which small shelving wounds heals spontaneously and medium sized wounds required shorter stiches near visual axis opposing perpendicular edges.
- b) Retinal detachment: Traumatic tractinal Rd following a penetrating injury may result from vitreous incarceration in we wound.

**3) Enucleation/Evisceration**

Primary enucleation or evisceration should be considered for extremally severe injuries when it is impossible to repair the sclera and where there is no prospect of retention of vision

**4) Superficial foreign body**

Dust particle, foreign body, particle of coal, small insects are adherent to the tear film or superior tarsal conjunctiva. Sometimes small particles and insect will become deeply embedded causing eye pain and discomfort. In a patient of linear corneal abrasion, there should be small foreign body in tarsal surface of upper lid.

**5) Intraocular foreign body**

Intraocular foreign body can traumatize the eye mechanically by introducing the toxic effects in intraocular structures.



### 6) Bacterial endophthalmitis

Bacterial endophthalmitis occurs after penetrating trauma when foreign body retained in the eye.

Risk factors: Risk factors include delay in primary repair, retained foreign body and position and extent of wound. Clinical signs are the same as acute postoperative endophthalmitis.

#### Chemical injuries

Chemical injuries range in severity from loss of vision to blinding. Eyes can be damaged by solid, liquid powder or aerosol chemicals. Chemical injuries that happen in home are most likely to be caused by soaps, disinfectants, solvents, ammonia and bleach. Alkali burns are twice as common as acid burn.



Blunt injury<sup>[13]</sup>



Penetrating injury<sup>[14]</sup>



Superficial foreign body<sup>[15]</sup>



Intraocular foreign body<sup>[16]</sup>

#### Grading of severity

Grading is performed on the basis of corneal clarity and severity of limbal ischemia (Ropper-hall system)

**Grade 1:** Grade 1 is characterized by a clear cornea (epithelial damage only) and no limbal ischemia.

**Grade 2:** Grade 2 shows a hazy cornea but with visible iris detail and less than 1/3 of the limbus being ischemic.

**Grade 3:** Grade 3 manifests total loss of corneal epithelium, stromal haze obscuring iris detail and between one-third and one-half limbal ischemia.

**Grade 4:** Grade 4 manifests with an opaque cornea and more than 50% of the limbus showing ischemia.

Most mild injuries are treated with topical antibiotic ointment for about week, with topical steroids and cycloplegics if necessary.

#### CONCLUSION

All ocular structures are vulnerable to injury. The site is often depended on the cause and mechanism. Prevention should be taken before ocular trauma could happened by using some preventive measures. Eye injuries are avoidable, if prevention is quiet effective at work place, on the sports field and in the home, patients and ophthalmologist must be aware of activities that incur high risk of eye injury and must take advantage of protective eye wear that is available, which varies with the need of the patient and when used in proper manner can reduce eye injuries in certain settings by as much as 90 percent. Even in Ayurveda the different treatment modalities explained by our Acharyas includes *Nasya*, *Alepa*,

*Parisechana, Tarpana*, concept of *Pathya*, application of *Snighdha, Hima, Madhura Dravyas*.<sup>[17]</sup> We need to stress more on the importance of preventive measures by which incidence of ocular trauma cases can be reduced. In the unfortunate event of trauma. With the knowledge of circumstances of injury, their nature and damage caused, early appropriate management can be taken and preventive measures may be advised.

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