



AYURVEDIC MANAGEMENT OF SASHALYAJA NAYANABHIGHATA I.E., CORNEAL INJURY DUE TO FOREIGN BODY: A SPECIAL CASE REPORT

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ABSTRACT

Ayurveda has a vivid and special attention regarding “*Nayanabhigata (eye injury)*” with its *lakshanas (signs and symptoms)* and *chikitsa (treatment)*. The supreme authority, *Acharya Sushruta* has explained in detail as a separate entity owing to its importance and emergency care. Even though the eye is well protected by coverings like lids, margins of the orbit, nose and a cushion of fat behind, injuries are not uncommon. Corneal foreign body is an object either superficially adherent or deeply embedded in the cornea. The removal of foreign body is a common procedure performed in emergency care. If corneal foreign body is not removed in a timely manner, they can cause prolonged pain and lead to many serious complications such as infection, ocular necrosis and finally leading to blindness. A 65 year old male patient approached to our OPD with the history of pain, foreign body sensation, watering of eyes and redness since 3 days. On Slit lamp Bio microscopy a patch of thin layer of wooden piece was adhered to the corneal surface in the left eye. Owing to the History, Signs and Symptoms the case was diagnosed as corneal foreign body, and the wooden piece patch was removed carefully with the help of an ear bud. After removal, immediately *Netra prakshalana (eye wash)* was done using *triphalaka kashaya* and has advised *Mahatriphaladi ghrita aschyotana* every hourly in the dose of 2 drops. After treatment all the symptoms got subsided with the healed corneal epithelium along with normal vision.

KEYWORDS: Nayanabhigata, Corneal foreign body, Netra prakshalana, Ashchyotana.

INTRODUCTION

Though the eyes are protected by the eyebrows, lids, margins of the orbit, the nose and a cushion of fat from behind; it is a delicate structure where even a small trauma may lead to devastating effects. These injuries can occur at any place like home or workplace like carpentry, agriculture work, fireworks or during sports etc. These injuries if not treated in timely manner, they may lead to many complications like blurring of vision, opacities, serious uveitis, and may even finally lead to complete blindness i.e., it depends on the type of the foreign body and site of the eye affected.

Corneal foreign body is any foreign material that is adhered to the superficial layers or embedded into the deeper layers of the cornea. If the corneal foreign body is not removed and left untreated it may lead to permanent scarring, infection, tissue necrosis etc., and may even lead to blindness. Superficial foreign bodies are more common than the deeply embedded ones. Small particles may become lodged in the corneal epithelium or stroma, particularly when projected toward the eye with considerable force. The foreign object may set off an inflammatory cascade, resulting in dilation of the

surrounding vessels and subsequent edema of the lids, conjunctiva, and cornea. White blood cells also may be liberated, resulting in an anterior chamber reaction and/or corneal infiltration.^[1]

The changes seen in the cornea are simple abrasion, recurrent corneal erosion, tear in descemet's membrane, corneal edema, blood staining of cornea etc. It may be associated with sharp pain, ciliary and conjunctival congestion, excessive lacrimation, reflex blepharospasm, photophobia and defective vision.

Treatment is based on the type of the injury. The extra ocular corneal foreign body is removed by anaesthetizing the affected eye and attempt is made to remove the foreign body with the help of a wet cotton swab stick. If it fails then foreign body spud or hypodermic needle is used. If such a foreign body happens to be magnetic then it is removed with a hand-held magnet. After removal of foreign body, patching with antibiotic eye ointment is applied for 24 to 48 hrs. Lubricant eye drops and antibiotic eye drops are instilled 3-4 times a day for about a week.^[2]

As per Ayurvedic classics, *nayanabhighata* has got prime importance where *acharya Sushruta* has explained in *uttara tantra* 19th chapter. The *lakshanas* of *nayana abhighata* are *samrambha*(edema), *raga*(redness) and *ruja*(severe pain).^[3] Also *acharya Vangasena* has mentioned *nimeshonmeshana ashakti*(difficulty in opening and closing of eyelids).^[4]

Sushruta acharya has mentioned *snigdha*(unctuous drugs), *madhura*(sweet) and *sheeta*(cold) *upachara*(treatment) in case of eye injury. Also he has mentioned *parishechana*(eye irrigation) and *dhumapana*(herbal smoking).^[5]

CASE REPORT

Ayurvedic management of a case of corneal injury due to foreign body.

A male patient of 65 years old having symptoms of severe pain and foreign body sensation from 3 days, who approached outpatient department of *shalakya tantra*, SKAMCH & RC, Vijaynagara, Bengaluru, Karnataka on 7th September 2017 was chosen for the case study.

History of present illness: 3 days prior to the day when patient attended our OPD, while he was doing his furniture work, suddenly a patch of wooden piece got

projected into his left eye. He developed mild irritation then and thus ignored it for that day. The next day morning he developed pain, foreign body sensation in the left eye. It was associated with redness and watering of left eye. The next day when the condition got worsened he visited our hospital for the same.

Present complaints & duration: Severe pain and foreign body sensation in the left eye since 3 days. It was associated with redness and watering of eyes.

History of previous illness: No history of any major illness.

Aims and objectives of the study

1. To manage *nayana abhighata*(corneal injury) with *netra kriyakalpa*(ayurvedic ocular therapeutics).
2. To evaluate the effects of *seka*(eye irrigation) and *aschyotana*(eye drops) in corneal injury due to foreign body.
3. To evaluate the effects of *mahatriphaladi ghrita* in treating corneal injury.

MATERIALS AND METHODS

Place of study: Shree Kalabyraveshwara Swamy Ayurvedic Medical College And Research Centre, Bengaluru. 560104.

Table no 1: On slit lamp examination.

		RIGHT EYE	LEFT EYE
Cornea	Size	Normal	Normal
	Shape	Normal	Normal in curvature
	Surface	Normal	Visible foreign body on the upper quadrant close to the pupil
	Transparency	Transparent	Hazy cornea around the foreign body

Treatment: Patient was treated on OPD basis. The patient's left eye was anaesthetized using xylocaine 2% drops. Then he was made sit comfortably on the examining chair. With the aid of slit lamp, the corneal foreign body which was adhered in the upper quadrant of the eye was carefully removed with the help of a cotton swab stick.

After removal, the corneal surface was again examined under slit lamp. The glistening corneal transparency was

disrupted and there was a superficial geographic depression of epithelial surface at the site.

Pain and foreign body sensation had come down after removal of the foreign body.

At follow up the cornea was clear with no signs of scarring.

Table no 2: Drugs used in the treatment.

<i>Kriyakalpa</i> (ocular therapeutic procedures)	Name of the medicine	Route	<i>Kaala</i> (duration)
<i>Seka</i> (eye irrigation)	<i>Ksheerapaka</i> (milk media) with <i>Triphala</i> + <i>yashtimadhu</i>	Topical	For 5 minutes after removal of foreign body of the left eye.
<i>Aschyotana</i> (eye drops) followed by lid closure	<i>Mahatriphaladi ghrita</i>	Topical	2 drops in the left eye every hourly. For 7 days.

Duration of the study: 7 days and 1 follow up after treatment.

Assessment criteria

To evaluate the effect of the treatment, the following criteria were considered

1. Subsiding of redness and watering of the eyes.
2. Re-epithelialization of the cornea leaving no scar.

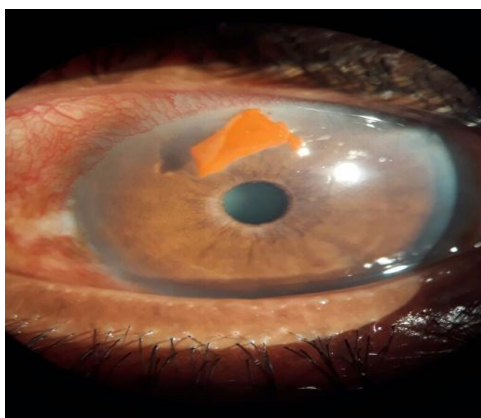
Treatment protocol

1. Removal of the corneal foreign body.
2. *Ksheera Seka* with *triphala* and *yastimadhu* to the left eye for 5 mins immediately after the removal of foreign body.
3. *Ashchyotana* with 2 drops of *mahatriphaladi ghrita* to the left eye every hourly for 7 days.

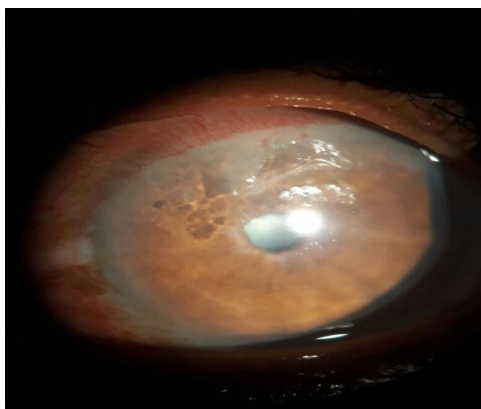
The signs and symptoms were recorded before and after the treatment.

RESULT

After treatment, all the symptoms got subsided and the corneal transparency and re-epithelialization was established without any scar.



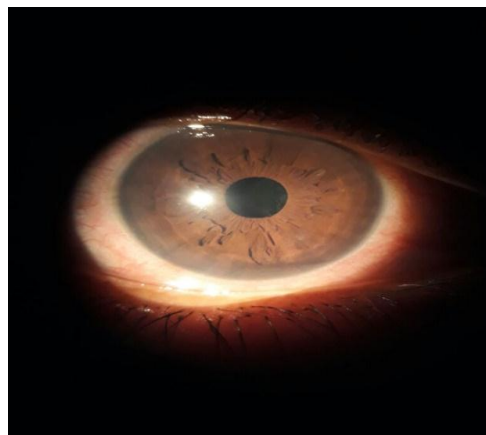
Picture number 1: Corneal foreign body on slit lamp examination.



Picture no 2: After removal of foreign body.



Picture no 3: Patch of wooden piece on removal.



Picture no 4: After treatment on slit lamp examination.

DISCUSSION

Corneal foreign bodies if retained can spread infections. And these secondary corneal infections affect the quality of vision and cause corneal scarring. Hence all the foreign bodies must be treated immediately as they are the case of emergency.

The corneal epithelium acts as a barrier and helps in maintaining its transparency. This corneal barrier is formed only upon the maturation of the epithelial cells. Hence it is important to treat the epithelial defects immediately for they shouldn't produce further damage to the cornea by infections or by scarring of it. Any discontinuity of epithelium in the cornea can be re-epithelialized by lid closure & lubricants.

In Ayurveda, *Acharya Vangasena* has mentioned *sashalya netra lakshana* (symptoms of foreign body in eyes) as excessive lacrimation, redness, difficulty in opening & closing of eye lids.^[6]

And while explaining the *sadhyaasadyata* (prognosis) of *sashalya netra* (foreign body in eye) *acharya Sushruta* has mentioned that injury to first *patala* (layer/tunic of eye) is *sadhya* (curable). i.e., cornea is considered under 1st *patala*.^[7] And he has advised *parisechana* (eye irrigation) in the removal of foreign body.^[8]

According to *Chakradatta*, in *sashalya netra chikitsa* (treatment of foreign body in the eye) – *aschyotana* (eye drops) with *sheeta dravyas* (cold potency drugs) should be performed.^[9]

According to *Ashtanga Hrudaya*, *parisechana* (eye irrigation) with milk processed with drugs like *yastimadhu* (*Glycyrrhiza glabra*), *jeevaka* (*Microstylis wallichii*) etc., are indicated in *netra abhighata chikitsa*.^[10]

Probable mode of action of seka

In this case study, *seka* (eye irrigation) with *triphala* and *yastimadhu ksheerapaka* was done first to overcome inflammatory changes.

Seka is mainly done to achieve an effective absorption at the site of action for adequate period of time to elicit the desired response. The instilled drug is retained in the tear volume only for 2-3mins. The amount of the drug which is required for the absorption from the cornea is absorbed through the palpebral fissure when irrigation is done on closed eye.

The corneal epithelium is lipophilic. And hence *ksheerapaka seka* with *triphalala* and *yashtimadhu* which is of lipid media is absorbed at the site efficiently.

Triphala constitutes of 3 drugs viz. *Amalaki*(*Embllica officinalis*), *Haritaki*(*Terminalia chebula*) and *Vibhitaki* (*Terminalia belirica*). The individual drugs contain phytochemicals like tannins, flavonoids, alkaloids, amino acids, organic acids, vitamins, minerals etc. And these are responsible for the antimicrobial, antiulcer, wound healing, anti-oxidant properties.

Triphala having metabolic stimulant activity maintains the homeostasis and prevents further pathogenesis in the eye. Ascorbic acid present in the *triphalala* suppresses the intracellular reactive oxygen species level and enhances cell proliferation. It accelerates corneal epithelial wound healing through stem cells enhancement of cornea. Glutathione and cysteine in the *amalaki* further helps in the healing of the wound. Also glutathione and other amino acids help in protecting cellular membrane integrity and also maintain normal hydration level. Phenols or polyphenols and tannins are profusely found in *triphalala* which are responsible for antioxidant property. Gallic acid found in the *triphalala* is a selective inhibitor of COX-2, henceforth acts against inflammation.^[11]

The glycyrrhetic acid and asparagine in the *yashtimadhu* acts against inflammation. The carbenexolone in it raise prostaglandin levels; stimulate mucous secretion and cell proliferation. Also *yashtimadhu* exhibits potent anti-bacterial activity because of the presence of secondary metabolites such as saponins, alkaloids, flavonoids.

Probable mode of action of *aschyotana*

The *mahatriphaladi ghrita aschyotana* was advised along with the lid closure. According to *acharya Sharangadhara aschyotana* helps in relieving *ruk*(pain), *toda*(pricking pain), *kandu*(itching), *gharsha*(foreign body sensation), *ashru* (excessive watering), *daha*(burning), *raga*(redness/congestion).

The penetration of the drugs depends on the permeability of the epithelium of the cornea. The epithelium is highly permeable for lipids. Thus lipophilic drugs have higher order of magnitude in permeability in the epithelium of the cornea. Hence higher the lipid solubility more will be the penetration. And the contact time of the viscose drugs is more with the cornea.

Thus lipophilic action of *mahatriphala ghrita* facilitates the transportation of the drug to the target organ and finally reaching the cell.

Ghrita(ghee) is considered as *ropaka*(wound healing) and *sandhanakara*(epithelialization by tissue) i.e., *ghrita* helps in closing wounds and regenerating cells around the wounds, eventually hastens the healing process.

Ghrita contains vitamin A D E and K and several saturated and unsaturated fatty acids which are responsible for the metabolic processes involved in healing of the corneal wound. Vitamin A and K helps in preventing oxidation injury to the body. Also Vitamin K keeps epithelial tissue intact which is very useful for wound healing. The fatty acids exert the antimicrobial action.¹² *Ghrita* contains linoleic acid and butyric acid which acts against inflammation.

Also *ghrita* is *dhatuposhaka* (it helps epithelialization), its *snigdha*(unctuous) guna helps in lubricating the tissues at cellular level, maintain eye moisture, and bathe/rinse debris from the eyes and relieve the discomfort. Also it is *balavardhaka*(strengthens the sense organ and also the vision) owing to its property of nourishing connective tissues due to the presence of short chain fatty acids.

And it has *sanskaranuvartana* property i.e., when *ghrita* is processed with other drugs, it attains the properties of other ingredients without losing its own.

Triphala and other ingredients possess antioxidant, anti-inflammatory, antibacterial, wound healing properties. Also the drugs in the *mahatriphaladi ghrita* help in restoration of corneal integrity by promoting the regeneration of tissue.

Hence *mahatriphaladi ghrita* was advised to promote healing and improve vision.

CONCLUSION

All the foreign bodies should be treated as emergencies, as it disturbs the normal visual function and in severe cases complications may develop like permanent scarring.

It also leads to complications like opacity, blurring of vision and serious uveitis.

In this case *seka* with *triphalala* and *yashtimadhu ksheerapaka* and *Mahatriphaladi ghrita aschyotana* has reestablished transparency and epithelialization. All the symptoms like pain, foreign body sensation, redness and watering of eyes had come down. Both the treatments promote healing by Regenerating and protecting corneal epithelium.

Hence this treatment aims at quick healing without leading to any complications and without leaving any scar.

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