IMPORTANCE OF NETRA KRIYAKALPAS IN NETRA ROGAS – A REVIEW

Shifali Sahu1*, Sagar Sharma2, Rashmi Tiwari3 and Kirti Mishra4

1Assistant Professor Department of Shalakya Tantra,
2Associate Professor Department of Swasthavritta and Yoga,
3Associate Professor Department of Rachna Sharira,
4Assistant Professor Department of Agad Tantra Evam Vyavahara Ayurveda, Rajiv Lochan Ayurvedic Medical College and Hospital, Chandkhuri, Durg, Chhattisgarh.

*Corresponding Author: Dr. Shifali Sahu
Assistant Professor Department of Shalakya Tantra Rajiv Lochan Ayurvedic Medical College and Hospital, Chandkhuri, Durg, Chhattisgarh.

ABSTRACT
The promotion of the visual acuity was considered as one of the priorities in the branch of Shalakya tantra of Ayurveda. Many procedures and formulations have been described to cure the ophthalmic disorders. Present conventional system of medicine has topical and systemic administration of drugs to the eye which are highly inefficient and there is a need for controlled, sustained release, particularly for conditions that affect all parts of the eye. Sushruta, the father of ancient Indian surgery, advocated ‘Kriyakalpa’ is the main therapeutic procedure for Netra Rogas, along with other forms of treatment. He has described this in a separate chapter in Uttartantra of Sushruta Samhita. Some of the proven principles of management procedures and medicaments include intake of purified medicated ghee (Ghiritapana), nourishing eye bath therapy (Tarpana), and processed liquid instillation through nostrils by drops or powders (Nasya), eye bath therapy (Pariseka), application of medicated paste on eye lids (Bidalaka) and collyrium (Anjana). These procedures improve the vision by strengthening of the ciliary muscles, maintaining unctuousness of the eye ball, proper accommodation of the lens, delays the senile opacity of the lens etc. On the other hand these procedures also helpful in dealing with inflammatory conditions like conjunctivitis, hordeolum, corneal ulcer, staphyloma, panophthalmitis etc. Thus Kriyakalpa can be done in healthy as well as diseased eye conditions to improve the ophthalmic health.

KEYWORDS: Ayurveda, Netra rogas, Uttar tantra, Kriyakalpa, Eye diseases.

INTRODUCTION
Kriyakalpa is the basis of the ophthalmic disorders, as Panchkarma is the basis of Kayachikitsa. When we refer to our classics for the therapeutic measures adopted in the management of eye diseases, we find that the management includes many of the topical treatments along with systemic ones. The reason might be that the drugs administered systematically may not cross the blood aqueous, blood-vitreous and blood-retinal barriers. Ancient seers have designed many unique routes of drug administration and also varied formulations to suit the anatomy, physiology and pathological status of all parts of the body and more importance is given to design eye medicaments. The eye being a very vital and sensitive part was of main focus while designing Kriyakalpas-Charaka Samhita deals with the diseases of the entire body on the medical lines without paying any special reference to the disorders of the eye, ear, nose and throat.[1] However, some references are available regarding the eye ailments saying that eye disorders should be treated with the help of mentioned three Kriya kalpa in Chikitsha Sthana i.e Bidalaka, Aaschyotana and Anjana.[2] Acharya Sushruta mentioned five Kriya kalpa i.e., Seka, Aaschyotana, Anjana, Tarpana and Putpaka. Acharya Sharangadhara mentioned 7 Kriya kalpa five of them are same as Sushruta and added Pindi and Bidalaka to them. Acharya Bhavamishra has meant the same seven types of Kriyakalpa as that of Sharangadhara Samhita while Chakradatta has described complete chapter for Neteroga with many formulations and Bahirgunthana Vidhi for acute eye condition[3] which include Seka and Aschyotana (continuous pouring or instilling drops). Now all these topical measures came into play and these are called as ‘Kriya Kalpas’.

Kriyakalpa[6] - Kriyakalpa is the main therapeutic process for ophthalmology in Shalakya tantra, as the Panchkarma is the bases of Kayachikitsa. The word Kriyakalpa built from two words: Kriya and Kalpa. Kriya means therapeutic procedures for Chikitsa used to cure the disease and Kalpa means practicable, possible, manner of acting, a prescribed rule. So Kriyakalpa means specific formulation used for therapy in Ayurvedic Ophthalmology. It includes selection of specific
procedure, preparation of special drug form and finally its proper application to the eyes. When we refer to our classics for the therapeutic measures adopted in the management of eye diseases, we find that the management includes many of the topical treatments along with systemic ones. The reason might be that the drugs administered systematically may not cross the blood aqueous, blood-vitreous and blood-retinal barriers. Now the topical measures came into play and these are called as ‘Kriya Kalpas’.

**Etymology** - Kriyakalpa is formed by two words as Kriya and Kalpa. Word Kriya refers here to therapeutic procedures, which cures the disease without causing any adverse effects while the word Kalpa indicates the specific formulations adopted for the therapeutic procedures. Hence, the word Kriyakalpa literally means to perform proper treatment.

**Definition of kriyakalpa** - No specific definition of Kriyakalpa has been given by the ancient scholars except the commentator Dalhana who opines that Kriyakalpa includes various preparations like Tarpana, Putapaka etc. for the treatment of eye diseases, as a local measure.

**Classification and Indication of kriyakalpa** - Astanga Hridaya indicated for Tarpana Karma.

**Tarpan drayvas** - Ghrita prepared from Kwatha of Kashmarya, Madhuk, Kuma, Utapa, Urupaga, Kushtha, Brihati, Tamala, Mamsi, Sariva, Prapaundarika, Darbhanela, and Kashleri in milk. This Ghrita can be used. By using Aja Yakrita, Agaru, Priyangu, Nalada, and Devadaru prepare Ksheerapaka. Navaneeta from the curd obtained from this Ksheerapaka is used for Tarpana.

**Tarpana duration** - a) According to Dosha- i. Vata- 1000 Matra ii. Pitta- 800 Matra iii. Kapha- 600 Matra 

**How netra tarpana work** - By virtue of its Sanskaranuvartana property, Ghrita attains the properties of ingredients without losing its own. Ghrita is supreme in Jangama Sneha and is Balavardhaka, Ojovardhaka, Vayasthapana, Agni Deepana and Dhatuposhaka. Acharya Charaka in Sutrasthana Snehadhyaya explained that, "Snehonilam Hanti" which means that Snehana is the supreme treatment for Vata Dosha. He mentioned Akshi - Tarpana as one of the 24 Snehpravicharana in Sutrasthana 13 chapter. According to Charaka, Ghrita is effective in subsiding Pitta and Vataja disorders; it improves Dhatus and is overall booster for improving Ojas.[11]

**Putapaka** - In this process the oily (ghee) substance is kept in eye for a specific time by special arrangement. Simple ghee or oil is used as medicine which is the form of suspension. So its particles do not leave the eye and contact time is more and more drugs are absorbed. It will cross corneal epithelium barrier easily due to its lipophilic property. Putapaka can be done in all those conditions in which Tarpana is done. Those in whom Nasya (nasal instillation of medications), Tarpana and Snehapana (treatment in which medicated oils or ghee is given for intake in metered doses either everyday or as a part of pre-treatment procedure for Shodhana vis-à-vis cleansing procedures) are contraindicated are not eligible to take Putapaka. Putapaka can be done for those eligible to take the treatment after the aggravation of Dosha’s has been subsided.[12]

**Indications** - It is indicated when eye get fatigued after the Tarpana, i.e., for rejuvenation of eyes. Putapaka is used to give energy to the eyes to overcome from fatigued stage. Putapaka yogas are- Putapaka prepared from Nimba Patra and Lodhara with Jala. Juice of cooked Aja Yakrita, camel, Pig with Pippali, Saindhava, Madhu and Ghrita prepared as Putapaka method. This Ghrita can be used for Tarpana.

**Types of putapaka** - Putapaka is of 3 types:[13]

i) Snehana Putapaka (Putapaka having or admixed with fats or prepared with unctuous or fat-rich drugs) – The below mentioned are used for Snehana Putapaka:- Sneha (ghee or oil), Mamsa (meat), Vasa (meat soup), Majja (bone marrow), Meda (fat) and Madhura aushadha (medicines or drugs having sweet taste).[14]

Indications:- It is preferred to be done in a person having Rukskha (excessive dryness in the body) or Ruksna netra (dryness in the eye), Vata disorders of the eye.

Duration– It is done for 200 Matra kala.

ii) Lekhaneeeya Putapaka (Putapaka prepared using drugs having a scraping nature i.e. capacity to scrap off the Kapha and fat) The below mentioned drugs are mixed together and used for Lekhaneeeya Putapaka:- Jangala yakrit mamsa (flesh or meat of the liver of animals and birds living in dry and desert regions), Shunti (Ginger), Maricha (Pepper), Pippali (Long pepper), Krishna or Kanta loha bhasma (Ash or calyx of magnetic iron), Tamra bhassma (Calyx or ash of Copper), Shankha Bhasma (Ash or calyx of conch), Pravala bhasma (Calyx or ash of Coral), Saindhava lavana (Rock salt), Dadhi (curds etc).[15]

Indications: It is preferred to be done in a person having Snigdha (oily body or excessive unctuousness of the body) or Snigdha netra (very unctuous eyes). It is preferred to be done in Kapha-Vata conditions or Kapha-Vata disorders of the eye.

Duration: It is done for time duration of 100 Matra kala.
iii) Ropaneeya Putapaka: Prepared by the Milk, Madhu, Ghrita Jangala mansa and Tikta rasa dravyas. It is preferred for bringing strength and luster in the eye or in eyes afflicted by morbid.

Indications: Pitta, Rakta or Vata or eyes afflicted with Vrana (ulcers). Acharya Vagbhata names it as Prasadana Putapaka (Putapaka prepared with nourishing drugs) and indicates its usage in Drishti Roga’s (Vision related disorders).

Duration: It is done for time duration of 300 Matra kala

Seka: Seka is defined medicated solution poured as stream from 4 Angula on closed eye continuously for specific time according to Doshas. It is more beneficial in those conditions which are strong and cannot cure with Aschyotana. In this process “medicine is poured on closed eye (on eye lids) continuously from four inches height for a specific time according to Dosa” so the medicine is absorbed through skin of lids.

Classification and doses: a) Lekha (200 Matra)- Kapha Roga b) Ropana (600 Matra)- Pitta and Rakta Roga c) Snehana (400 Matra)- Vata Roga

Indications - Itching in the eyes, Watery eyes, Conjunctivitis, Burning eyes, Dry, Photophobia.

Aschyotana: It is indicated as first procedure in all eye diseases. Instilling medicated Ghee / Drops to eyes for specific frequency. This is useful in Dry eyes, myopia, and allergic and inflammatory eye disorders. Aschyotana is Adya upakrama in which medicated drops are instilled into open eye from do Angula (approximate 2") height at Kanineeaka Sandhi. Most commonly used medicated drop for Aschyotana is Triphala Kwath containing Amalaki (Emblica officinalis), Bibhitaki (Terminalia bellerica) and Haritaki (Terminalia chebula).

Indications: Initial stage of eye disease when Doshas are not severely vitiated specially Pitta Dosha. It is used in eye condition like mild pain, redness, watering, foreign body sensation, itching, burning sensation, congestion of vessels etc. It is contraindicated in night.


Aanjan: The medication applied in the form of ointment to the eyes is termed as Anjana. When the patient has undergone the Shodhana therapies of Vamana and Virechana and the Niraama Doshha are causing eye diseases, then Anjana should be done.

Types- The Anjana are of three types, as we have to treat diseases developed by three different humours.

1) Lekhana anjanas mentioned for Kapha predominant conditions
2) Ropana anjanas for Pitta related diseases
3) Prasadana anjanas for Vataja vikaras.

Preparation of Anjana- The Lekhana anjanas are made of Dravyas having Kashaya. Amla, Lavana and Katu in rasa, Ropananjanas are with Thiktha dravya and Prasadanjanas with Madhura seeta dravyas.

Time of applications of Anjana. There is different opinion regarding the timing of Anjana. During night due to sleep and in the day time because of the hot rays of sun the eye becomes weak, so it is advised to do Anjana both morning and evening. While applying in the morning it should be Kapha samana in nature as there is chance of vitiation of the same in the morning while in the evening it is better if it is Pitta samana as it may make the eye fresh and cool which became weak due to the exposure to hot sun in this way the application of Anjana in morning and evening surely correct the daily vitiation of Doshas in a healthy eye. It is not applicable in pathological eye. The other opinion is regarding the application of Theekshnanjana, as it contains Katu, Lavana, Amla dravyas which of boutique combination of Agni vayu applying it in day time will again harm the eye as there is hot outside, but during night the coolness of the moon helps the eye to recover easily from the ill effects of Theekshnanjana. But according to some, application of Anjana in night should strictly avoided to them the Seetha in night it will cause Stambhana so the drug can’t act properly. Acharya Susruta advises to do Anjana in morning for Kapha predominant eye diseases, during evening for Vata related eye diseases and in Rakta pitta predominant eye diseases it is advised to do in night.

Mode of action: After deciding the type and dose of Anjana the desired amount of it can be applied in the eye Using the different Salakas mentioned for particular purpose i.e., If Lekhana is the aim of treatment the Salaka made of Tamra (copper) is the best option and for Ropana kharma a Kalalohaja (iron) salaka is better and if Prasada is the ultimate aim of treatment one can prefer a Salaka made of Roopya (silver) Suvarna (gold) and Anguli (finger) is also mentioned for the application of Anjana in the eye. After applying the Anjana patient is asked to move the eye ball after gently closing the eye, the patient is asked to move the eye so that Anjana may spread all over the surface of the eye, opening and closing of the eye spontaneously, rubbing of the lid forcefully and washing of eye should be avoided just after the application of Anjana kharma. When the eye becomes free from the gritty feeling developed after the application of Anjana netra prakshlana should be performed with suitable decoction. While preparing the decoction the factors like disease, Dosha and season should be considered. After washing the eye, it should be cleaned with a piece of clean cloth. In conditions like severe vitiation of Kapha, Dhoomapana can be advised.
after Anjana. Theekshnanjas are contraindicated for prolonged use, and Prathyjanjas are advised for correcting the complications if developed during application of Theekshnanjas. [23]

**Pindi**- Bandaging a medicated bolus over closed eye for a stipulated time period. Also known as Kavalika it is indicated in Abhishyandha, Adhimanth. [24]

Indications- Acute stages of all eye diseases in general and Abhishyanda in particular. It reduces inflammation produced due to trauma or wound.

**Bidalaka**- Application of medicated paste over the eyelids for a stipulated time. It is application of medicated paste to eyelids externally except at eye lashes. [25]

Indications- Acute stages of eye disorder, burning sensation, swelling, discharge, redness, pain, foreign body sensation etc.

**Ocular pharmacology**

Ocular pharmacotherapeutics can be delivered by four methods. [26]

1. Topical instillation in to conjunctival sac as in the form of drops ointment gel and ocu-serts.
2. Peri ocular injection – these include subconjunctival, subtenon, retro- bulbary and peri bulbar injection.
3. Intra ocular route-intracameral injection (into anterior chamber) intravitreal injection (into vitreous cavity)
4. Systemic administration – in the form of antibiotics and steroids. Eye drops are the simplest and most convenient method of topical application. It is instilled in two forms i.e aqueous solution and aqueous suspension.

In solution drugs are totally dissolved but it’s quickly diluted by tears and drains in to NLD. So tissue contact time is less in suspension tissue contact time is higher than solution because the drug is presents as small particles and kept suspend in aqueous medium. Ointments and gel increases bioavailability of drugs by increasing the tissue contact time and by preventing dilution and drainage of active ingredients. Ocuserts form a system of drug delivery through membrane. These can be placed in upper or lower fornix to a week. The corneal epithelial tight junction and lipid – water-lipid sandwich layer provides mechanical and chemical barrier for the drug absorption. The lipophilic and hydrophilic substance can be effectively delivered. Permeability across sclera depends on size and weight of molecules. [27]

Depending upon this ocular pharmacology the therapeutic effect of Kriyakalpa can be understandable and conclusion of the effects can be drawn as follows.

**CONCLUSION**

As in Ayurveda, we are applying ophthalmic therapeutics either in the form of local therapy i.e. Kriyakalpa or in the form of systemic use i.e., oral Chakshushya dravyas. The main aim of any pharmaco-therapeutics is the attainment of an effective concentration at the site of action for a sufficient period of time to elicit the response. In practice, therapeutic effect is found in all types of Kriyakalpa. It is up to the science to correlate the observations with their scientific explanation. Here in present review article, it is tried to correlate the Ayurvedic ocular therapeutic i.e. Kriyakalpa on the basis of modern pharmacotherapeutic. Various drugs can be selected according to the stage and types of the disease and can be used in various Kriyakalpa procedures according to need. In the light of above fundamentals of modern pharmacology, all the Ayurvedic ocular therapeutic procedures are relevant as such. Today current methods of drug delivery exhibit specific problems that scientists are attempting to address. For example, many drugs’ potencies and therapeutic effects are limited or otherwise reduced because of the partial degradation that occurs before they reach a desired target in the body. If orally administered time-release medications deliver treatment continuously, rather than providing relief of symptoms and protection from adverse events solely when necessary. Present conventional system of medicine has topical and systemic administration of drugs to the eye which are highly inefficient and there is a need for controlled, sustained release, particularly for conditions that affect the posterior segment. Various non implantable and implantable drug delivery devices have been developed which are far from satisfactory and result in more adverse effects which is driving scientists to research more and more into safe, effective drug delivery methods for all parts of the eyes.

**REFERENCES**