



AYURVEDIC REVIEW ON NETRA RACHANA AND KRIYA SHAREERA

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ABSTRACT

Ayurveda includes an independent discipline called Shalaky Tantra, which focuses on treating sensitive areas above the clavicles, including the eyes. The history of Ayurveda shows that this branch of medicine had an extraordinary expansion from the time of the Vedas to the time of the Samhitas. The Uttara Tantra of Sushruta Samhita gives a significant description of the structure of the eye (Rachana Shareera), which explains the importance of the eye at the outset. The Samhitas also contain sparse references to the physiological aspects (Kriya Shareera) of the eye. An in-depth understanding of the anatomy and physiology of the human body is necessary for the diagnosis and treatment of all diseases. This article aims to bring together those components of Netra Rachana and Kriya Shareera from several classical texts.

KEYWORDS: Ayurveda, Netra, Rachana Shareera. Kriya Shareera

INTRODUCTION

Under the following topics, *Netra Rachana Shareera* addresses the structural elements of the eye : *Shareera – Anga – Pratyanga, Panchabhoutikatva of Netra, Size and shape of Netra, Parts of Netra, Akshi bandhana, Sira – Dhamani – Srotas, Peshi, Snayu, Growth and decline of Drishti. Netra Kriya Shareera* accounts for the functional aspects of the eye which can be understood through the following headings, *Indriyatha Sannikarsha, Roopaalochana, Chakshurbuddhi, Role of mind, Optical illusions and other inhibitory factors. Dosh, dhatu and mala* play a vital part in understanding both *Rachana and Kriya Shareera*. The cellular constituents *vata, pitta, and kapha*, when in balance, produce the "*tridhatu*," a three-way tissue or pillar that maintains life. However, the same three elements cause illness, mortality, and aging when they are aberrant.

DESCRIPTION

RACHANA SHAREERA OF NETRA SHAREERA – ANGA – PRATYANGA

- A fully developed foetus with all its parts is called as '*Shareera*' and it is composed of 6 *Angas* (parts), namely, 4 extremities, the trunk and the head. [SU. SHA. 5/3,4]
- Eyes and eyebrows are among the *Pratyangas* (subsidiary organs) which occur in pairs and Acharya Charaka opines that 2 orbits, 4 eyelids, and 2 pupils are among the 56 subsidiary organs which are adjoined with 6 major organs. [C. SHA. 7/11]

PANCHABHOUTIKATVA OF NETRA [SU. U. 1/11,12] [SU. SHA. 5/3]

Table – 1 Relation between parts of an eye and Panchamahabhuta			
MAHABHUTA	NETRA BHAGA	PART OF EYE	FUNCTION
<i>Prithvi</i>	<i>Pala</i>	Muscular Parts	Compaction
<i>Agni</i>	<i>Rakta</i>	Blood and Vessels	Metabolization
<i>Vayu</i>	<i>Krishna</i>	Black Portion	Division
<i>Jala</i>	<i>Sita</i>	White Portion	Moisturization
<i>Akasha</i>	<i>Ashru Marga</i>	Tear Channels	Development

SIZE AND SHAPE OF NETRA [SU. U. 1/10,13]

Eyeball measurement :

- Transverse / horizontal diameter – 2 *angulas* (about an inch)
- Sagittal / Antero-posterior diameter (depth) – the breadth of one's own thumb
- Circumference - two and a half *angulas*.

Shape :

- *Budbuda* – Water bubble
- *Suvritta* - Circular
- *Gosthanaakara* – Resembles the teat of a cow.

Dimension : [A. S. SHA. 8/36]

- *Krishna mandala* is 1/3rd of *netraayama* and also *Shukla mandala*.
- *Drishhti mandala* is 1/7th of the *Krishna mandala*.
- *Drushti mandala*'s shape is like a *masura* seed and is 1/9th of *Krishna mandala*.

PARTS OF NETRA

- The circular structures (*Mandala*), the joints (*Sandhi*) and the layers (*Patala*) which are five, six and six respectively constitutes the major parts of an eye. [SU. U. 1/14]
- *Indriyas* (sense organs) are formed from (the essence of materials presents in) *srotas* (channels) which transport *kapha*, *rakta* and the *mahabhutas*. [A. S. SHA. 5/48]



Figure – 01 Netra Rachana Shareera

MANDALA

- *Mandalas* are arranged one behind the other in order. [SU. U. 1/15]
- The *shukla mandala* is formed from the essence of *sleshma* and is paternal in origin, while the *krishna mandala* is from *rakta* (blood) and is maternal in origin; Middle portion the *dristimandala* is derived from both. [A. S. SHA. 5/49]

Table – 2 Netra Mandala and its Modern correlation	
MANDALA	CORRELATION
<i>Pakshma</i>	Eyelashes
<i>Vartma</i>	Eyelids
<i>Shukla</i>	Conjunctiva, Sclera
<i>Krishna</i>	Cornea, Choroid
<i>Drishhti</i>	Pupil, Retina

SANDHI

Sandhis, serve as lines of demarcation of the *mandalas*. [SU. U. 1/16]



Table – 3 Netra Sandhi and its modern correlation	
SANDHI	CORRELATION
<i>Pakshma-Vartmagata</i>	Lid margin
<i>Vartma-Shuklagata</i>	Fornix?
<i>Shukla-Krishnagata</i>	Limbus?
<i>Krishna-Drishtigata</i>	Free margins of Iris?
<i>Kaninika</i>	Inner canthus
<i>Apanga</i>	Outer canthus

PATALA

Of the *patalas*, 2 are in the *vartma mandala* (Eyelids) and 4 in the eye proper. The thickness of *patala* one-fifth of *Drishti mandala*. [SU. U. 1/17-19]

Table – 4 Netra Patala, its Composition and its modern correlation		
PATALA	COMPOSITION	CORRELATION
<i>Prathama</i>	<i>Teja + Jala</i>	Sclera, Conjunctiva, Cornea
<i>Dviteeya</i>	<i>Pishita</i>	Ciliary Muscles, Uveal Tract
<i>Tritiya</i>	<i>Meda</i>	Vitreous, Lens
<i>Chaturtha</i>	<i>Asthi</i>	Retina

AKSHI BANDHANA [SU. U. 1/19]

- All the parts of the eye are held together by some components. They are *sira* (veins), *kandara* (tendons), *medas* (fat) and *kapha*.
- *Kalakasthi* is a type of bone indicating its relationship with *krishna mandala*.
- *Sleshma* is the binding material in all joints.

MARMA [SU. SHA. 6/27]

- There are 107 *marmas* (vital points) in human body. Out of which 37 are present above the clavicle. *Marmas* that directly relate to eye are,
- *Apanga* - situated below the tips of the eyebrows and about the external corners of eyes. An injury to it causes blindness or defective vision.
- *Avarta* - situated above and below the eyebrows which results in blindness or impaired vision, if injured.
- *Shringataka* - the junction of the 4 *siras* (nerves) that supplies nutrition to nose, ears, eyes and tongue and proves fatal within the day.

SIRA [SU. SHA. 7/7]

- There are 700 *siras* in the human body, of which 40 are major. They are 10 each of *Vata*, *Pitta*, *Kapha* and *Rakta*. These further divide into 175.
- 8 of *vata*, 10 each of *pitta*, *kapha* and *rakthavaha* *siras* supplements the eye.
- Charaka explains, There are 56 *siras* in eyes, 2 each are responsible for lid movements and one each responsible in supplementing the *apanga sandhi*.

DHAMANI [SU. SHA. 9/5]

- *Dhamanis* in the human body originate from *nabhi* and are 24 in number. 10 of them have an upward course, 10 have a downward course and 4 have a transverse course.
- These 10 up-coursing *dhamanis*, reaching heart respectively ramify themselves into 3 branches, thus making 30 ramifications in all.
- Out of those 30, two *Rupavahi dhamanis* maintain visual perception and 2 *Ashruvahi dhamanis* regulate flow of tears.

SROTAS [C. V. 5/7-8]

- *Srotas* are channels that serve the purpose of circulation by conveying the *dhatu*s (body-elements) undergoing metabolic processes.
- *Srotas* are innumerable and are described with reference to their boundaries and pathological characteristics. *Srotas* that directly relates to eye are,
- *Annavaha srotas* - *Viddha* or damage to it can make the person blind.
- *Raktavaha srotas* – Its damage causes redness of the eyes.



PESHI [SU. SHA. 5/37]

- The *Peshis* (muscles) number 500 in all. Of which 400 are in extremities, 66 in trunk and 34 in the above clavicle region in which 2 are situated in eyes.

SNAYU [A. S. SHA. 5/76]

- There are 900 *Snayus* (ligaments), out of which 600 are in extremities, 230 are in lower body and 70 in upper body. *Prithu* type of *snayu* is present in *Shiras*.

GROWTH AND DECLINE OF DRISHTI

Some of the classical references that discuss the growth and decline of eyes are,

- The *drushti* of a person doesn't go with the general expansion of the body. [SU. SHA. 4/60]
- Childhood, growth, complexion, ingenity, skin, semen, eyes, ears, mind and all sense acuities diminish in successive decades respectively which suggests that sight will deteriorate after 70 years of age. [A. S. SHA. 8/25]
- Acharya Sharngadhara opines that vision remains normal till the age of 60 and then deteriorates. [SHA. PU. 6/20]
- The *tejas* (light) present in the eyes combining with the light of its own nature present outside, becomes capable of functioning just as a sharp weapon coming in contact with stone (sharpner), By excess contact it gets destroyed. Though present in the midst of water, it does not lose its fiery nature just like *vidyut* (lightning) and *badava* (fire present in ocean). [A. S. SHA. 5/51]
- Vata, Pitta, Kapha, Rakta* and *Rasa* are the five types of *dhamanis* in the *panchendriyas* that supply the *panchendriyartha* to the *Atma* throughout life. At the time of death, the respective *dhamanis* become separated from their respective *indriyas* and attain *panchatva*. [SU. SHA. 9/11]

KRIYA SHAREERA OF NETRA

PHYSIOLOGICAL UNDERSTANDING OF VISION

Functional aspect of *Netra* is better understood through the following headings,

Indriyaartha Sannikarsha (Image) *Roopaalochana* (Light) *Jnanotpatti* (Eye) →

❖ **Indriyaartha Sannikarsha** – Contact between eyes and objects :

- The process of gaining knowledge involves five main factors. Sense faculties, Sense materials, Sense organs, Sense objects, Sense perceptions. [C. SU. 8/3]

<i>Indriya</i>	<i>Chakshu</i>	Eye
<i>Indriya dravya</i>	<i>Jyoti</i>	Light
<i>Indriya adhishtana</i>	<i>Akshi</i>	Eyeball
<i>Indriya artha</i>	<i>Rupa</i>	Image, Colour
<i>Indriya buddhi</i>	<i>Chakshur buddhi</i>	Visual perception

- The five perceptions are the Visual perception etc. These perceptions are the results of the coordination of the senses, the sense-objects, mind and soul, they are fleeting and are of the nature of decisions. These are known as the five pentads (*Panchapanchaka*). [C. SU. 8/12]
- Particular sense organ perceives the same matter which forms the proper object of that sense organ. [SU. SHA. 1/15]

❖ **Roopaalochana and Jnanotpatti** – Analysis of images and Visual perception :

- Receiving and analysis of images is done by *pitta*, especially *alochaka* which is situated in the pupil (*Antah taraka*) [SU. SU. 21/10] [A. H. SU. 12/14] [C. SU. 12/11]
- Alochaka pitta* possesses *chakshu vaisheshika* and *buddhi vaisheshika*. [BH. SHA. 4/4]

Chakshu vaisheshika

- Jnana Udirana* happens after the contact of *Atma, Mana, Indriya* and *Artha* – Then it reaches *Chitta* – Resulting in *Jnana Pranipata*. [C. SU. 11/20]
- Analysing the images one by one or collectively is based on, *Lakshana* (Details), *Samsthana* (Base), *Rupa* (Form/appearance), *Varna* (Colours) and *Swara* (Sounds) which is known as *Vaisheshika Jnana*. [BH. SHA. 4/4]

Buddhi vaisheshika

- Buddhi vaisheshika* is situated in *shringataka* (between the two eyebrows) and ✓ Perceives minute details by *Jnana*



- ✓ Provides complete visual perception
- ✓ Records visual images and remembers these images for long time
- ✓ Recalls and recollects, when necessary
- ✓ Helps to foresee the future things [BH. SHA. 4/5]

- From among these each sense, predominant in one element in particular, contacts objects which have a similar predominance of that element, owing to innate affinity and ubiquity. [C. SU. 8/14]
- Theory of common origin (*Tulya Yoni*) forms the basis of sensory perceptions. The light which illuminates the objects and the eye that receives it, both are derived from *tejo mahabhuta*. Hence eye receives only *Rupa* (Visual perception) and nothing else.
- Dalhana, gives the example of water in the river moving to join the sea. The similarity is responsible for this attraction as similar things always go together. [SU. SHA. 1/15]

❖ **Role of Mind** : [C. SU. 8/7]

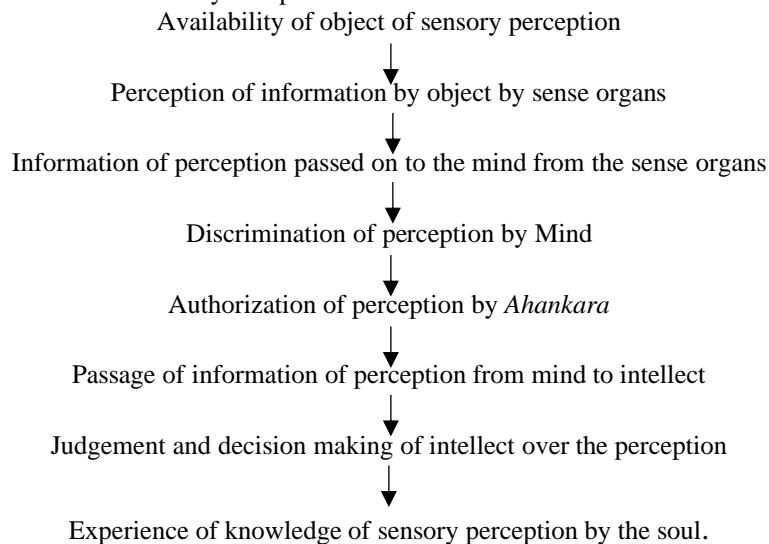
- Mind leads sense organs in contacting the sense-objects. The image that the mind perceives is a conceptual interpretation of it rather than an impression on the retina. Vision, therefore, is a process of mental interpretation.
- Vision depends on the mind's imagination. When the imagination is perfect, sight is good. Diversion of mind is one of the inhibitory factors of vision.

❖ **Optical illusions and other inhibitory factors** : [C. SU. 11/8]

Factors leading to failure of perceivable observation,

- *Ati Sannikarsha* - Very near
- *Ati Viprakarsha* - Too far
- *Avarana* – Obstruction
- *Karana Daurbalya* - Defect in organ
- *Mano Anavasthana* - Distracted mind
- *Samana Abhikara* – Similarity
- *Abhi bhava* – Overpowering
- *Ati Saukshmya* - Very minute

Sequence of Visual perception can be collectively interpreted as :



ROLE OF DOSHA, DHATU AND MALA

➤ **VATA** : [C. SU. 12/8] [C. CH. 28/9] [C. CH. 28/22,23]

- Regulation of sensory organs
- *Vyana vayu* helps in movement of eyelids (Constriction and Dilatation)
- *Prana vayu* supports vision
- If vitiated, prevents visual perception

➤ **PITTA** : [SU. SU. 21/10]

- *Pitta* is responsible for analysis of objects

➤ **KAPHA** : [A. H. SU. 12/17] [B. P. PU. 3/132] [C. SU. 17/60] [SU. SU. 21/14]



- *Tarpaka kapha* supplements nutrition through *Sneha*
- *Shleshaka kapha* lubricates joints
- RASA : [SHA. PU. 5/13,14]
 - Watery portion of eye is the *mala* of *rasa dhatu* or *kapha drava* or A type of *ranjaka pitta*
- RAKTA : [C. CH. 15/17] [SU. SU. 15/14] [SU. SU. 35/16] [C. V. 8/104]
 - *Sira* and *kandara* helps in binding of eyeball in the bony socket
 - Increase in *rakta dhatu* in *akshivaha siras* cause redness of eye
 - *Rakta* provides moisture and colour
- MAMSA : [C. V. 8/105] [SU. SHA. 5/38]
 - *Mamsa* provides *pushti* (health) and any reduction in the level of *mamsa dhatu* will lead to *netra glani*, weakness of eye
 - Components of the eye like *sira*, *kandara*, *snayu*, *asthi* and *sandhi* get stronger by the support of *mamsa dhatu*
- MEDA : [C. V. 8/106] [A. S. SU. 19/3]
 - *Meda* provides lubrication
 - *Snayu* and *sandhi* are the *upadhatu* of *meda*
 - 3rd *patala* of *Drishti* is made of *meda*
- ASTHI : [A. H. SU. 11/19]
 - *Pakshma* is the *mala* of *asthi dhatu*
 - 4th *patala* of *Drishti* is supported by *kalakasthi* (Dalhana)
- MAJJA : [SU. SU. 35/16] [A. H. SU. 11/19] [C. SU. 28/17] [SU. SU. 46/529]
 - *Majja dhatu* provides excellent eyes.
 - Heaviness and darkness of eye are the features of increase and decrease of *majja* respectively.
 - The oiliness in the discharges of eye is the *mala* of *majja*.
- SHUKRA : [C. V. 8/109] [C. CH. 15/3,4]
 - *Shukra dhatu* pleases eyes as it is filled with milk
 - One should increase *tejas* along with *shukra* for better vision.
- MALA : [A. S. SU. 19/7] [A. S. SU. 19/10]

The increase of *netragata mala* will result in :

 - *Bahulya* : Increase of discharges
 - *Dravata* : Increased liquidity exudates
 - *Kandu*, *Gourava* : Itching and heaviness of eye

Decrease of *netragata mala* will produce :

 - *Malayana Shosha* : The dryness of the eye
 - *Malayana Shunyatwa* : Lack of functions of vision
 - *Malayana Laghava* : The lightness

CONCLUSION

Ayurveda has the potential to gain more traction in the medical discipline of ophthalmology with further research and analysis of *Rachana* and *Kriya shareera* of *Netra*. Many eye disorders, their pathologies and treatment features, have been comprehensively discussed by the majority of Acharyas. It is crucial to understand the physiological and anatomical components in order to take both preventative and curative measures. Sushruta Samhita contains a significant portion of the anatomical explanation of the eye (a recitation of Acharya Videha's description), as does Ashtanga Hridaya and Ashtanga Sangraha. Charaka samhitas and other samhitas also have sporadic allusions. With regard to the *Kriya Shareera*, Acharya Bhela provides a unique point of reference for a dispersed interpretation of the *samhitas*.

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