

CRITICAL REVIEW OF THE CONCEPT OF *DRISHTI* IN AYURVEDIC SAMHITAS WITH REFERENCE TO MODERN SCIENCE

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ABSTRACT

Ayurvedic classics describe five primary sense organs known as *Pancha Gyanendriya*, among which *Chakshu* (eye) is regarded as the most important, as it is responsible for vision (*Drishti*). *Acharya Sushruta*, has elaborately discussed the concept of *Drishti* in the *Sushruta Samhita*. The eye is described through various anatomical entities such as *Mandala*, *Patala*, *Sandhi*, *Pesi*, *Sira*, *Marma*, and *Drishti*, with special emphasis on six *Netra Patalas*, which can be correlated with the layers of the eye described in modern ophthalmology. The term *Drishti* is considered controversial in the context of *Netra Roga* due to its multiple interpretations. Rather than representing a single anatomical structure, *Drishti* may be understood as the functional unit of vision, constituted by the essential *Dhatus* of the internal eyeball. *Ayurvedic* scriptures provide a comprehensive description of both *Netra Rachana Sharira* and *Netra Kriya Sharira*, reflecting a holistic approach to ocular

anatomy and physiology. With the increasing need to integrate *Ayurvedic* concepts with contemporary science, interpretation of classical terminologies in light of modern ocular anatomy is essential for better understanding of *Drishtigata Rogas* and their effective management.

KEYWORDS: *Drishti*, *Pancha Gyanendriya*, *Netra Patala*, *Ocular Anatomy*, *Modern Ophthalmology*.

INTRODUCTION

In *Ayurvedic* literature, *Netra* (eye) is regarded as the most vital among the *Pancha Gyanendriya*, owing to its indispensable role in visual perception (*Drishti*). *Acharya Sushruta*, has provided a comprehensive and systematic description of *Netra Sharira*, wherein the eye is anatomically classified into *Mandala* (zones), *Sandhi* (junctions), and *Patala* (layers).^[1] Among the five *Mandalas*, *Drishti Mandala* occupies the innermost position of the eyeball and is considered the principle seat of vision, with most *Drishtigata Rogas* being attributed to its pathology. The concept of *Drishti* in *Ayurveda* encompasses both structural and functional dimensions of vision and is described as being composed of *Pancha Mahabhuta*, with predominance of *Teja Mahabhuta* in the form of *Alochaka Pitta*. Classical texts further delineate *Alochaka Pitta* into *Chakshu Vaisheshika*, responsible for image formation at the ocular level, and *Buddhi Vaisheshika*, involved in higher visual processing and perception.^[2] Despite extensive classical references, the precise anatomical and functional correlation of *Drishti* remains a subject of debate, necessitating critical interpretation in the context of *Netra Rogas*. This study aims to critically analyze the *Ayurvedic* concept of *Drishti* and correlate it with modern ocular anatomy and visual physiology, thereby attempting to elucidate its anatomical, physiological, and pathological relevance in a contemporary scientific framework.

Etymology of *Drishti*

The word *Drishti* is derived from the *Sanskrit* root दृश् (to see) by the adding कर्णे क्तिन् “that by which one sees” (*Pasyaty aneneti*) Etymologically, *Drishti* denotes the process by which vision occurs as well as the means through which seeing is possible. Thus, it conveys both the act of seeing and the instrument or medium of vision.

In a broader sense, the term *Drishti* encompasses a wide range of meanings, including sight, vision, perception, observation, and the faculty of seeing. Beyond its literal visual connotation, *Drishti* is also used metaphorically to signify knowledge, awareness, insight, and perception. When associated with specific attributes or qualifiers, the term acquires contextual and specialized meanings, reflecting its multifaceted usage in *Ayurvedic* and philosophical literature.

Overall, the essence of the term *Drishti* can be understood in two principal dimensions. First, it denotes the structural component of the eye, referring to a specific anatomical entity described in the *Ayurvedic* texts. Second, it signifies the functional aspect of vision, encompassing the act and process of seeing.

***Drishti* as the Structural Entity**

In *Ayurveda*, the concept of *Nidana* (etiological factors) plays a Significant role in understanding the pathogenesis of ocular diseases. *Acharya Sushruta*, in the *Uttaratantra*, explains that indulgence in specific *Nidanas* leads to vitiation of the *Doshas*. These vitiated *Doshas* circulate through the *siras* (channels), ascend towards the *urdhva bhaga* (supraclavicular region), and subsequently localize in particular structures of the eye. This localization at specific sites, including *Drishti*, culminates in the manifestation of various ocular disorders.^[3]

***Drishti* as Mandala**

Acharya Sushruta, while describing the gross anatomy of the eye, identified five distinct *mandalas* circular zones of the eyeball namely *Paksma*, *Vartma*, *Shweta*, *Krishna*, and *Drishti*. Among these, the *Drishti Mandala* occupies the innermost and most vital region. Its dimension is described as one-seventh of the *Krishna Mandala* (cornea)^[4] and one-ninth of the *Taraka* (iris).^[5]

Further elaborating on its measurement, *Acharya Sushruta* states that the *Drishti* is of *Masura-dala-matra*, comparable to the size of a lentil cotyledon. In contrast, *Acharya Sharangadhara* defines its dimension as *Masurardha-dala-matra*, that is, half the size of a lentil cotyledon. The shape of the *Drishti* is described as *Vivara-Krti*, resembling a circular aperture or opening. Its appearance is likened to a fiery spark (*Khadyota-abha*) or a minute luminous point (*Visfulinga-abha*).^[6]

In the chapter *Krishna-gata Rogas Vijnaniyam*, *Acharya Sushruta* emphasizes the clinical significance of the location of corneal ulcers (*Savrana Sukla* or *Savrana Sukra*). He states that when an ulcer is situated near the *Drishti Mandala* that is, close to the center of the cornea the prognosis is unfavorable, whereas ulcers located away from the *Drishti* carry a better prognosis. This observation underscores the importance of the *Drishti* as a crucial anatomical landmark in determining disease outcome.

Certain pathological conditions, therefore, can be understood primarily on the basis of the structural involvement of the *Drishti* rather than purely on functional impairment. *Acharya Vagbhata* also corroborates this view by describing the dimensions of the *Drishti Mandala* in proportion to the *Krishna Mandala*. Collectively, these classical descriptions emphasize that *Drishti* is conceptualized predominantly as a structural entity in *Ayurvedic* ophthalmology, rather than merely as a physiological or functional process.

Drishti Mandala is described as being situated immediately adjacent to the *Krishna Mandala*, which can be correlated with modern ocular anatomy. The eyeball is structurally composed of three concentric coats. The outer fibrous coat consists of the cornea anteriorly, forming approximately the anterior one-sixth, and the sclera posteriorly, constituting the remaining five-sixths. The middle vascular coat includes the choroid, ciliary body, and iris, while the innermost nervous coat is the retina. According to modern anatomical understanding, when proceeding from anterior to posterior direction, the structure located immediately posterior to the cornea is the pupil, an aperture within the iris. This anatomical positioning supports the classical *Ayurvedic* description of *Drishti Mandala* being situated just internal to the *Krishna Mandala*.

***Drishti* As Eyeball**

In the *Chikitsasthana*, *Acharya Sushruta* describes the therapeutic application of *Srotanjana* (antimony sulphide) in ocular disorders, reflecting a precise understanding of ocular structures. He delineates the *Shweta Mandala*, corresponding to the cornea, and the *Kisna Mandala*, identified with the *Taraka* (iris), which is situated within the white circular zone. Further, *Sushruta* emphasizes the proportional dimension of *Drishti* in relation to the *Krsna Mandala*, highlighting a concept of structural harmony and spatial organization within the eyeball.

In the management of *Nayanabhighata* (ocular trauma), *Acharya Sushruta* advocates nourishing therapies such as *Snigdhadi Drishti Prasadana Janana Vidhi*^[7], aimed at restoring visual integrity. Similarly, *Acharya Charaka* recommends *Mridu Sweda* (gentle fomentation) for *Drishti*, performed by covering the eye with *Padma* and *Utpala* leaves^[8], indicating a protective and therapeutic approach toward the entire ocular globe.

During *Agni Karma* (thermal cauterization) procedures performed on the eyelids, *Sushruta* advises covering the *Drishti* with a wet cloth, implying deliberate protection of the entire

eyeball while treating only the affected external region. Such instructions suggest that *Drishti* is not confined to a minute intraocular structure but represents the eyeball as a whole.

In the context of *Hathadimanta*, a complication of *Adimantha* (glaucoma), *Sushruta* mentions *Drishti Pratikshipan*.^[9] *Acharya Dalhana* explains this as outward protrusion of the eyeball, clinically correlating with features such as proptosis due to increased intraocular pressure. This description further reinforces the identification of *Drishti* as synonymous with the eyeball rather than a singular internal visual point.

***Drishti* as Inter-pupillary Distance**

Acharya Sushruta, in the *Sutrasthana*, describes *Drishtyantara* as the distance between the two *Drishti Mandalas*, measured as four *angula*. Among the five *Mandalas* of the eye, the *Drishti Mandala* denotes the circular area formed by the pupillary margin. Hence, *Drishtyantara* can be interpreted as the distance between the two pupils. In contemporary anatomical terminology, this corresponds to the inter-pupillary distance. The average inter-pupillary distance in adult males generally ranges between 50 and 75 mm.^[10]

***Drishti* as Cornea**

Acharya Sushruta, while discussing the prognosis of *Savrana Shukra*, emphasized that involvement of the *Drishti* signifies an unfavorable prognosis.^[11] This observation finds a close parallel in modern ophthalmology, particularly in the context of corneal ulcers. When corneal ulcers are left untreated, the pathology may extend into the deeper layers of the cornea. Damage to the corneal stroma often results in permanent corneal opacity, leading to diminished visual acuity and blurred vision. In advanced or severe cases, such stromal involvement can culminate in profound visual impairment or even complete loss of vision.

***Drishti* as Pupil**

In *Kaphaja Linganasha*, the *Drishti Mandala* is described as constricting in sunlight and dilating in darkness, a characteristic feature of a light-responsive structure. This physiological response strongly supports the identification of *Drishti* with the pupil. Further, while discussing the prognosis of *Savrana Shukra*,^[12] *Acharya Sushruta* notes a favorable outcome when the disease does not involve the peripheral part of the *Drishti*, which may be interpreted as the outer margin of the pupil.

The *Drishti* is stated to be covered by *Bahaya Patalas*, which are described as *Tejo-Jalashrita* and must remain transparent for proper *Roopagrahanam* (perception of vision). In modern anatomical terms, this correlates with the transparent cornea covering the pupil. The dimension of the *Drishti* is described as *Masoorā-dalamatra* (lentil-sized), approximately 3–4 mm, which closely corresponds to the normal pupillary diameter of 2–4 mm under varying illumination.

Acharya Sushruta further describes the *Drishti* as measuring one-seventh of the *Krishna Mandala* and one-ninth of the *Taraka*. *Acharya Dalhana* identifies *Taraka* as the black part of the eye, corresponding to the iris. These proportional descriptions indicate that the *Taraka* (iris) is larger than the *Drishti* (pupil), while also suggesting a dimensional distinction between the *Krishna Mandala* and *Taraka*, reflecting a nuanced understanding of ocular anatomy in *Ayurvedic* literature.

Acharya Sushruta has described a pathological condition known as *Gambhirika*, characterized primarily by structural and functional alterations of the *Drishti*. These changes include distortion (*Vikruta/Viroopa*), constriction (*Sankuchita*), and abnormal inward displacement (*Abhyantara*)^[13] of the *Drishti*. Under normal conditions, *Drishti* is described as *Vivarakriti*, meaning circular in shape. However, in *Gambhirika*, this normal circular configuration is lost, and the *Drishti* assumes an irregular and distorted form.

In iridocyclitis, adhesions may form between the pupillary margin of the iris and the anterior capsule of the lens, a condition known as posterior synechiae. These adhesions result in an irregularly shaped pupil, which closely corresponds to *Drishti Viroopa* described in *Ayurvedic* texts.

During iritis, the iris becomes edematous and congested, leading to sluggish and restricted pupillary movements. Although both the sphincter pupillae and dilator pupillae muscles are affected by the inflammatory process, the sphincter pupillae, being the stronger muscle, predominates. This results in pupillary constriction (miosis), which can be correlated with *Drishti Sankuchyate*.

Furthermore, due to the presence of posterior synechiae, the pupillary margins may appear pulled or drawn inward toward the lens, producing an inward displacement. This phenomenon corresponds to *Drishti Abhyantarā Cha* as described in *Gambharika*.

***Drishti* as the Lens**

In *Ayurvedic* literature, the *Drishti* is described as having the shape and size of *Masoor-dalamatra*, resembling a lentil seed. This comparison implies a biconvex, lenticular structure, which is noteworthy because, in modern ocular anatomy, the crystalline lens also possesses a biconvex shape. The lens is suspended by the suspensory ligaments (zonules of Zinn), which are attached to the ciliary body. The ciliary body contains ciliary muscles that regulate the curvature and position of the lens.

Ayurveda further describes the *Drishti-mandala* as exhibiting constriction in the presence of bright light and dilation in darkness or shadow. In modern physiology, although pupillary constriction and dilation are mediated by the iris, the lens plays a crucial role in visual adaptation by altering its thickness to focus light appropriately for distant and near vision—a process known as accommodation. In low-light conditions, focusing on distant objects becomes more difficult compared to near objects, owing to reduced retinal illumination and accommodative limitations.

***Drishti* as Retina and Optic Nerve**

Ayurvedic texts describe the *Netra* as being composed of five concentric *mandalas*: *Paksma*, *Vartma*, *Sveta*, *krsna*, and *Drisht*.^[14] Among these, the latter four *mandalas* are arranged sequentially from the outermost to the innermost region of the eyeball. This sequential arrangement clearly indicates that the *Drishti-mandala* represents the innermost anatomical component of the eye.

In contemporary anatomy, the retina is recognized as the innermost layer of the eyeball and is directly continuous with the optic nerve, which transmits visual impulses to the brain. This anatomical correspondence supports the interpretation that *Drishti* encompasses not merely a superficial optical structure, but the sensory apparatus of vision, including the retina and its neural connections.

Classical *Ayurvedic* descriptions further characterize the appearance of *Drishti* as resembling a firefly (*khadhyota*) or a minute luminous spark (*visfulingabha*).^[15] These similes emphasize a subtle, glowing, and light-responsive structure. In modern ophthalmology, a comparable phenomenon is observed as the red reflex, a quick and non-invasive diagnostic sign used to assess the transparency of the ocular media. The red reflex represents a reddish-orange reflection of light from the fundus, observed through an ophthalmoscope or retinoscope, and

arises due to reflection from the vascular retina and choroid. This modern observation closely parallels the *Ayurvedic* depiction of the luminous appearance of *Drishti*.

Ayurvedic measurements describe the *Drishti-mandala* as occupying one-seventh of the *krishna-mandala*. When correlated with modern ocular dimensions where the cornea (corresponding to the *krishna-mandala*) measures approximately 11.7 mm horizontally and 10.6 mm vertically calculated dimension of the *Drishti-mandala* approximates 1.5 mm. This measurement closely corresponds to the size of the fovea centralis, the most sensitive region of the retina responsible for sharp central vision.^[16]

Drishti as a Functional Area in the Occipital Lobe

Primary Visual Cortex (Striate Cortex – Brodmann Area 17)

The primary visual cortex is located in the occipital lobe along the walls and floor of the posterior calcarine sulcus, extending to the occipital pole. It is characterized by the presence of white striae, giving it the name “striate cortex,” and contains a high density of granule cells. It receives afferent input from the lateral geniculate body via the geniculocalcarine tract. Functionally, it processes visual information from the contralateral visual field fibers from the temporal retina of the same side and nasal retina of the opposite side project here. The right visual field is represented in the left hemisphere and vice versa. Additionally, the superior retinal quadrants project to the superior bank of the calcarine sulcus, while the inferior quadrants project to the inferior bank.

The secondary visual (association) areas (Brodmann areas 18 and 19) surround the primary visual cortex and occupy the remaining visual cortex on the medial and superolateral surfaces of the occipital lobe. These areas receive input from the primary visual area and integrate it with past visual experiences, enabling interpretation, recognition, and meaningful understanding of what is seen.

Binocular vision refers to the ability of both eyes to work together as a coordinated unit so that a single, unified image is perceived. This is achieved by the simultaneous stimulation of corresponding retinal points in both eyes, with visual impulses transmitted via the optic pathways to the visual cortex, where they are integrated.

A key feature of binocular vision is fusion, which allows the brain to combine two slightly different retinal images into one. This slight difference, known as retinal disparity, provides

the basis for depth perception (stereopsis), enabling accurate judgment of distance and spatial relationships.

Visual–motor integration (hand–eye coordination) refers to the neurofunctional ability by which visual inputs are processed and translated into precise, coordinated motor actions. This process primarily involves the integration of the visual cortex (occipital lobe), visual association areas (Brodmann areas 18 and 19), and motor areas of the frontal lobe.

Visual information received in the primary visual cortex is interpreted in the visual association cortex, where it is correlated with past experiences. This processed information is then transmitted to the premotor and motor cortex, often via the parietal lobe (especially the superior parietal lobule), which plays a crucial role in spatial awareness and guidance of movement. The coordinated activity of these regions enables accurate hand movements in response to visual stimuli, forming the basis of hand–eye coordination. Dysfunction in these pathways may result in impaired ability to perform skilled, goal-directed movements (visuomotor incoordination).

Indriya Panchapanchaka is an important Ayurvedic concept described by Charaka, which explains the structural and functional organization of sensory perception. It comprises a set of 25 components related to the five sense faculties (Pancha-Indriyas), offering a systematic understanding of how perception occurs from stimulus reception to cognitive interpretation.

This concept includes five groups: Pancha-Indriyas (sense faculties), Pancha-Indriya Dravyas (sensory materials), Pancha-Indriya Adhishtana (anatomical seats of sense organs), Pancha-Indriya Artha (objects of perception or stimuli), and Pancha-Indriya Buddhi (sensory cognition). Together, they describe the pathway of perception, where external stimuli are received by sense organs, transmitted through appropriate channels, and ultimately interpreted by higher centers.

Among these, Indriya Buddhi represents the functional intelligence of each sense organ, enabling the recognition and meaningful understanding of sensory inputs. It includes five types: Chakshu Buddhi (visual perception), Shrotra Buddhi (auditory perception), Ghrana Buddhi (olfactory perception), Rasa Buddhi (gustatory perception), and Sparsha Buddhi (tactile perception).

Panch Indriya	Panch Indriya Dravya	Panch Indriya Adhistan	Panch Indriya Artha	Panch Indriya buddhi
Chakshu Indriya	Agni	Eye	Roopa	Chakshu Buddhi
Shrotra Indriya	Aakash	Ear	Shabda	Shrotra Buddhi
Ghraana Indriya	Prithvi	Nose	Gandha	Ghraana Buddhi
Rasana Indriya	Jala	Tounge	Rasa	Rasana Buddhi
Sparshana indriya	vayu	skin	sparsha	Sparshana Buddhi

आत्मा मनसा संयुज्यते, मनः इन्द्रियेण, इन्द्रियार्थेन ततः प्रत्यक्षम्। {Tarksangrah, Deepika vyakhya}

The sense organs, through their contact (sannikarsa) with respective objects, transmit sensory information to the mind, which in turn, with the support of the conscious principle (Atma or Chetana Dravya), enables the immediate cognition of present experiences, known as Pratyakṣa Buddhi.

आत्मेन्द्रियमनोऽर्थानां सन्निकर्षात् प्रवर्तते।

व्यक्ता तदात्म्ये या बुद्धिः प्रत्यक्षं सा निरुच्यते॥ [Ch. Su. 11/20]

The relationship between Manas (mind) and Buddhi (intellect) is fundamental in understanding cognition. Manas is responsible for receiving sensory inputs and coordinating with the Atma, while Buddhi (also known as Pragya) is the faculty of discrimination and decision-making. It analyzes and determines what is right and wrong, a function termed Adhyavasaya. The Hridaya is considered the seat of Atma, along with its qualities and the mind. The recollection of past experiences is known as Smriti. Dhriti represents the controlling power that stabilizes and regulates the mind, ensuring proper guidance of thoughts and actions.[Su. Sa. 1/17; Dalhana].

Due to the influence of Sattva guna, the faculties of Dhi (intellect), Dhriti (self-control), and Smriti (memory) collectively analyze the knowledge received, regulate the mind, and ultimately convey the properly interpreted understanding to the Atma.

Hand–eye coordination in Ayurveda, though not described as a distinct term, can be comprehended through the integrated functioning of Gyanendriya (Caksu – eye) and Karmendriya (Pani – hand), along with the essential roles of Manas (mind), Buddhi

(intellect), and Atma (self). According to classical texts like the Charaka Samhita, perception begins with the contact between the sense organ and its object (Indriyārtha Sannikarṣa), where the eye perceives visual stimuli (Rūpa Grahana). The mind acts as a mediator (“Manah indriyaṇam pravartakam”), directing attention and enabling the processing of sensory input, while Buddhi analyzes and determines the appropriate response. Thus, Jñānotpatti (generation of knowledge) arises from the coordinated interaction of Indriya, Artha, Manas, and Buddhi.

Following cognition, the response is executed through the Karmendriya, particularly the hand, as described in the Sushruta Samhita, where action (Karma Pravṛtti) succeeds knowledge. This entire process is governed predominantly by Vata Dosha, especially Prāṇa Vata, which regulates sensory perception, and Vyāna Vata, which controls motor activity and coordination. Therefore, hand–eye coordination in Ayurveda represents a sophisticated psychoneuromotor mechanism in which sensory perception, cognitive processing, and motor execution are seamlessly integrated to produce precise and purposeful actions.

Physiological Consideration of Buddhi

Physiologically, Buddhi can be understood through the process of Jñānotpatti (genesis of knowledge), which involves the coordinated interaction of Atma, Manas, Indriya, and Indriyārtha. According to Acharya Charaka, knowledge arises when the soul, endowed with perceptual capacity, associates with the instruments (Karaṇa) namely Manas, Buddhi, Gyanendriyas, and Karmendriyas. Perception begins with the contact (Sannikarṣa) between sense organs and their objects in the presence of Manas. The mind preliminarily evaluates the object, after which Buddhi performs decisive judgment (Nīścayatmaka Buddhi), accepting what is beneficial (Guna) and rejecting what is harmful (Doṣa). Thus, Buddhi determines the merits and demerits of actions, making all purposeful behavior Buddhipūrvaka (intellect-guided).

From a neurophysiological perspective, Gyanotpatti (genesis of knowledge) can be understood as the process by which the nervous system receives and interprets sensory inputs. Specialized receptors detect specific stimuli and convert them into neural signals, which are transmitted to sensory and integrative centers for analysis. According to Müller’s law of specific nerve energies, each receptor is highly sensitive to a particular type of stimulus, responding selectively to it. This is comparable to the Ayurvedic concept of indriyas, where each sense organ perceives only its corresponding artha based on its bhūta composition. For

instance, somatic senses perceive touch, pressure, pain, heat, and cold, while special senses correspond to shabda (hearing), rupa (vision), rasa (taste), sparsha (touch), and gandha (smell).

In neurophysiological terms, samyoga (connection) can be compared to the synapse, where information is transmitted as neural impulses across a chain of neurons. Just as synapses form the fundamental basis of sensory transmission, Gyanotpatti (genesis of knowledge) requires the coordinated interaction (samyoga) of artha (object), indriya (sense organ), manas (mind), and buddhi (intellect).

At the प्रारम्भिक level, crude sensory discrimination occurs along the pathway from receptors to the spinal cord and thalamus, representing indriya function and corresponding to nirvikalpa Gynana—undifferentiated, direct perception. Further processing, including precise discrimination, localization, and interpretation, occurs in the cerebral cortex, reflecting savikalpa Gynana where manas and buddhi are actively involved.

The refined outcome of this process, termed manobuddhi, is generated in the association cortices. The parieto-occipito-temporal association area integrates sensory inputs for spatial awareness, language comprehension (Wernicke's area), and interpretation of visual information (angular gyrus). The prefrontal association cortex (areas 9, 10, 11, 12, etc.) is responsible for higher mental functions such as planning, decision-making, memory, emotions, personality, and social behavior. Thus, it serves as the seat of intellect and complex thought, representing the culmination of knowledge processing.

The modern concept of Gnanotpatti (perception) can be understood as a neurophysiological process in which specialized sense organs—eyes, ears, nose, tongue, and skin—receive stimuli from the external and internal environment. These organs contain specific receptors (general and special, such as photoreceptors, mechanoreceptors, and chemoreceptors) that convert physical stimuli into neural impulses. These impulses are transmitted through sensory neurons to different centers of the nervous system, where sensation (basic awareness) is produced. Perception, or Gnanotpatti, is the higher process in which the brain interprets and organizes these sensory inputs based on past experiences, leading to meaningful understanding of the environment.

Visual perception is the ability to interpret the surrounding environment through light reflected from objects. It is not merely visual acuity (clarity of sight), but a complex process involving the eyes, neural pathways, and the brain. Light enters the eye through the cornea and is focused by the lens onto the retina, a light-sensitive membrane that converts light into neural signals. This process, called transduction, is carried out by specialized photoreceptor cells—rods and cones which respond to light stimuli and generate nerve impulses. These impulses are transmitted via the optic nerve to the brain, particularly to the lateral geniculate nucleus and visual cortex, where visual information is processed. Some signals also reach the superior colliculus, contributing to reflexive visual responses. Ultimately, vision is the result of both sensory input and cognitive processing. Prior knowledge, expectations, and context influence how visual information is interpreted, allowing individuals to perceive and understand their environment meaningfully.

***Drishti* as a Functional Entity (*Drishti* as Vision)**

Ayurvedic texts provide clear and repeated references indicating that the term *Drishti* is frequently employed to denote the process of vision and its functional integrity, rather than being restricted to a single anatomical structure. This functional usage reflects the dynamic and physiological understanding of vision in *Ayurveda*.

Acharya Sushruta describes that the suppression of natural urges (*vegadharana*), such as *kshudha* (hunger) leads to disturbances of *Drishti*. These disturbances manifest as *krishta cha Drishti* conditions characterized by visual discomfort, ocular redness, and diminution of vision.^[17]

Similarly, *Acharya vagbhata* explains that suppression of the natural urge of *adhovata* (flatus) results in *Drishtyagni-varodha*. The term *Drishtyagni* metaphorically represents the functional “fire” responsible for perception of vision, analogous to *jatharagni* for digestion. Its *avarodha* (impairment) signifies deterioration of visual function.

This concept is further clarified by *Acharya Arunadatta* in his authoritative commentary, wherein he interprets *Drishtyagni-varodha* as resulting in *Drishti-raga* (ocular congestion or redness) and *Drishti-roga* (visual disorders). Such explanations emphasize that *Drishti* is understood as a functional principle governing visual perception, whose impairment leads to a spectrum of visual disturbances.

Additionally, *Ayurvedic* texts describe that when *visha* (toxic substances) are incorporated into *anjana* (medicated ocular applications), they may induce *Drishti-vibhrama*, manifesting as visual distortion or optical illusion, wherein objects are perceived differently from their actual form. Such descriptions clearly indicate a disturbance in visual perception, thereby highlighting the crucial functional role of *Drishti* in the act of seeing.

Acharya Charaka further elaborates that consumption of *visha-yukta ahara* (toxin-contaminated food) can lead to *Drishti-uparodha*, denoting obstruction or impairment of visual function. He explains that once such toxic food reaches the *amashaya* (stomach), systemic dissemination of toxins ensues, ultimately affecting vision. This description bears a striking resemblance to methyl alcohol toxicity in modern medicine, wherein metabolic by-products such as formic acid selectively damage the optic nerve, resulting in toxic optic neuropathy and severe visual loss.

Moreover, *Acharya Charaka* recommends *Drishti-prasadana* (or *Drishti-pradhana*) *varti* in the management of *Netra-roga* (ocular disorders).^[18] This formulation is described as possessing potent therapeutic efficacy, with classical claims suggesting its ability to restore vision even in individuals suffering from profound visual impairment. Such therapeutic emphasis again underscores that *Drishti* refers primarily to visual capability, rather than merely an anatomical structure.

In the *Sushruta Samhita*, *Drishti-visha* is described as a manifestation of toxicity arising merely from the sight (*darsana*) of a *Divya-sarpa* (divine or highly venomous serpent). This concept, where vision itself becomes the medium of toxic impact, further reinforces the interpretation of *Drishti* as the faculty of vision and perception, not solely the physical organ.^[19]

Furthermore, *Ayurvedic* literature describes that through the attainment of *Yoga-siddhi*, an individual may acquire the extraordinary ability to perceive extremely subtle or otherwise invisible objects, a phenomenon referred to as *Atindriya-darshana*. This heightened perception is achieved through *Drishti*, indicating that *Drishti* functions as the medium of visual perception even beyond normal sensory limits.

Ayurveda also recognizes *Arishta-suchaka lakshana*, ominous signs indicating impending death, which manifest through disturbances in the sensory organs (*indriyas*). When such

sensory perceptions occur in the absence of *jnana-sakti* (cognitive or interpretative power), it is considered indicative of the terminal phase of life. This observation further emphasizes the intimate association between *Drishti*, sensory perception, and higher cognitive integration.

Acharya Sushruta explains that congenital blindness (*jatya-andhatva*) occurs when *tejo-dhatu* the subtle essence of light and fire responsible for illumination fails to reach the *Drishti-bhaga* (visual apparatus). In the absence of this vital principle, normal visual perception cannot be established from birth.

Acharya Suśruta, while explaining *Linga-nasha*, states that when the *dosas* responsible for *Timira* advance into the fourth *patala*, they result in *Sarvato Drishti-runnadhi* and *Sarvataḥ drishti-rodha*, signifying a complete loss or obstruction of vision.^[20] This description clearly conveys that *Drishti* is used to denote visual power and perception rather than merely a structural component of the eye.

Similarly, *Acharya Vagbhata*, in the context of *Aupsargika Linga-nasha*, describes the condition as *Drishti-mushita-darshana*^[21], which literally means deprivation or loss of visual capacity. This further reinforces the functional connotation of *Drishti* as vision itself.

Ayurvedic literature also places considerable emphasis on the relationship between dietary habits (*ahara-sevana*) and visual function. These references highlight the role of nutrition in the maintenance and enhancement of *Drishti*. *Acharya Vagbhata* mentions that the application or use of preparations made from sesame seeds (*tila-kalka*) can lead to *Drishti-dushana*, indicating impairment of visual function.

In contrast, the intake of foods such as *mudga* (green gram) and preparations cooked in *ghrita* (clarified butter) are described as *Drishti-prasadana*^[22], meaning they promote clarity and strength of vision. Conversely, foods processed in *tila-taila* (sesame oil) are referred to as *Drishti-ghna*, denoting substances that are detrimental to visual power.

Acharya Sushruta describes procedures such as *Putapaka* and *kriyakalpa* under the concept of *Drishti-balartha karma*^[23], emphasizing their role in enhancing and strengthening vision. Similarly, *Acharya Vagbhata* explains that *Putapaka* possesses the effect of *Driga-baladhana*^[24], further highlighting its significance in improving visual power. *Acharya Sushruta* also mentions *Drishti-prasadana* as an important benefit of the *Nasya* procedure, indicating its role in promoting visual clarity. According to *Acharya Vagbhata*, the

application of *Mukha-lepa* contributes to enhancement of visual strength or capability, described as *Drishti-balam* or *Drishti-samarthyam-varhdhana*. However, he cautions that activities such as talking or laughing during the application may result in *Drishti-upaghata*, potentially leading to impairment of vision.

Additionally, both *Acharya Charaka* and *Acharya Vagbhata* acknowledge the significance of *Taila Abhyanga* (oil massage) and *Pada Abhyanga* (foot massage) in promoting *Drishti-prasadana*^[25], that is, enhancement of visual clarity. Furthermore, the application of *Prasadana anjana* is described as effective in correcting visual defects, being indicated for *Drishti-dosha-prasadana*, thereby contributing to the normalization and improvement of visual function.

***Drishti* as a Structural and Functional Entity**

Acharya Sushruta highlights that *Ropana Anjana* contributes to *Drishti-bala-varhdhanam*^[26], enhancing visual strength, and *Drishti-varnya-varhdhanam*, which improves the clarity or “color” of vision, reflecting its functional aspect. In conditions like *Pitta-vidagdha Drishti*, the eyes take on a yellowish hue (*Peeta-varna*), indicating a structural change. If the imbalance extends into the *Tritiya Patela*, day vision becomes impaired, showing a functional impact. Similarly, in *Sleshma-vidagdha Drishti*, the eyes appear white (*Shweta-varna*) and night vision is reduced, demonstrating both structural and functional effects. In cases referred to as *Nakula-ndhya*, the patient’s eyes shine like a mongoose pupillary area at night but are accompanied by night blindness. Finally, in *Animittaja Linga-nasha*, the eyes appear clear and of natural color (*Vaidurya-varna-vimala*), yet vision is lost (*Drishti-hanayate*)^[27], showing a disconnect between appearance and functional vision.

This condition reflects the involvement of both structural and functional aspects of *Drishti*. In *Abhighataja linga Nasha*, external trauma causes *Drishti-vidiryate*^[28], indicating structural damage to the visual apparatus. This is followed by *Drishti-hiyate*, or loss of vision, representing functional impairment.

Pathological Aspect of *Drishti*

The pathological dimension of *Drishti* is expressed through its defining *Lakshanas*, which indicate the presence of visual disorders. *Drishti*, as the functional power of the *Chakshu* Indriya, serves as a marker of ocular health, and its loss is referred to as *Linga-nasha*. This concept implies that any condition resulting in the diminution or loss of visual power

(*Chakshu Indriya-shakti-nasha*) can be classified as *Linga-nasha*. Accordingly, *Drishti-gata-roga* encompasses all diseases that impair vision.^[29] The term *Linga-nasha* is broad, extending beyond cataracts to include various disorders affecting the retina, optic nerve, vitreous pathway, uveal tract, lens, and conditions arising from hyper- or avitaminosis. Thus, *Drishti* is understood as involving multiple structural components of the eye, including the retina, optic nerve, vitreous visual pathway, uveal tract, and lens.

DISCUSSION

In *Ayurveda*, the concept of *Drishti* encompasses a wide scope, serving multiple purposes depending on the context. This study suggests that *Drishti* is not a singular entity but rather a composite of several structural and functional components, which correspond closely with modern ophthalmological understanding. It includes the central cornea, pupil, lens, vitreous body, retina, and the visual pathway, along with their functional outputs, all of which collectively enable vision.

Effective management of *Drishti*-related disorders requires a clear understanding of *Ayurvedic* terminology and their practical applications, aligning with the core *Ayurvedic* goals of maintaining health (*Swasthya Raksana*) and restoring wellness (*Roga-Prasamana*) in diseased states. The present study integrates extensive literary data from classical *Ayurvedic* texts and commentaries, along with modern medical references and relevant research articles, to provide a comprehensive understanding of *Netra Sarira* (ocular anatomy) and its correlation with contemporary science.

Acharyas have described the anatomy of the eye in detail, highlighting its shape, size, and the structure of its various components. *Acharya Sushruta*, in particular, enumerates 76 distinct eye diseases and their treatments in the Uttara Tantra. The eye performs dual physiological functions: *Rupa-grahana* (perception of form) and *Buddhi-grahana* (interpretation and cognition), as it predominantly consists of *Alochakrapitta*, the essence of *Tejas Mahabhuta*, representing light or fire. Despite its sophisticated functions, the eye remains vulnerable to imbalances, particularly influenced by *Kapha*, which can lead to various visual impairments.

Understanding *Drishti* as both a structural and functional entity, as well as recognizing the wide range of pathological conditions (*Drishti-gata-roga*) described in classical texts, provides a framework for integrating *Ayurvedic* principles with modern ophthalmology. Such

an approach can guide both preventive strategies and therapeutic interventions aimed at preserving and enhancing vision.

CONCLUSION

Understanding the term *Drishti* depends on the context in which it is used. Anatomically, *Drishti* may correspond to the pupil. In the case of disorders such as *Kacha*, *Timira*, or *Linga-nasha* classified as *Drishti-gata-rogas* it relates to the intraocular lens. Likewise, in conditions like *Pitta-vidakti Drishti* and *Sleshma-vidakta Drishti*, *Drishti-gata-roga* involves structures such as the optic nerve or the retina, highlighting that the term can represent different ocular components depending on the pathological context.

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