



## CONCEPT OF DWITIYA PATALGATA TIMIRA IN AYURVEDA WITH MODERN COUNTERPART: A REVIEW

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### ABSTRACT

There are five sense organs i.e., eye, ear, nose, tongue, and skin. Among these sense organs, *Ayurveda* gives prime importance to the eye. Almost 90% of knowledge is perceived only through the eyes. Humans are mostly dependent upon the vision for their day-to-day work. *Timira* is a disease of *Drishtimandala* that attributes a wide range of clinical conditions starting from mild blurring of vision to the potential risk of permanent vision loss. Presbyopia is not an error of refraction but a condition of physiological insufficiency of accommodation leading to a progressive fall in the near vision. The concept of Presbyopia is almost parallel to the concept of *Dwitiya Patalagata Timira* described in the chapter of *Drishtigata Roga*. Hence an attempt has been made to understand the correlation of *Dwitiya Patalagata Timira* with special reference to Presbyopia.

**Keywords:** *Drishtigata Rogas, Timira, Dwitiya Palagata Timira, Presbyopia.*

## INTRODUCTION

The eye is the most highly specialized organ serving the most vital function of providing sight to living creatures. Vision is unarguably the most important of the five senses. Hence all sincere efforts should be made by men to protect their eyes, throughout the period of life. For the person, who is blind, this world is useless, and the day and night are the same even though he may have wealth! <sup>1</sup> *Timira* is one among the *Drishtigata Rogas* explained by all *Acharyas*. In *Sushrut Samhita's* 7th chapter of *Uttara Tantra*, *Timir Roga* has come under the title of *Drishtigata Roga*. There are 12 types of *Drishtigata Roga*<sup>2</sup>. As explained by *Acharya Sushruta* and *Acharya Vagbhata*, *Avyakta Darshan*(Blurring of vision), *Suchipashyam Na Pashyathi*(The patient is unable to locate the eye of the needle), *Sukshma Cha Nekshate*( unable to fine objects) are the main symptoms of *Timira (Dwitiya Patalagata)*<sup>3</sup>. *Patala* is one of the structures in *Netra Sharira*(Anatomy). There are six *Netra Patalas*, two *Bahya Vartmagata Patalas* and four *Abhyantara Patalas*<sup>4</sup>. When the vitiated *Doshas* will move in the upward direction and reach the *dwitiya patala* of the eye, the patient will have blurred vision. The *Patalas* are considered as important as *Drishti* because the pathogenesis of *Drishtigata Rogas*, especially *Timira* has been described in terms of the involvement of successive *Patala*. The prognosis of the disease also depends upon the involvement of respective *Patala*.<sup>5</sup>

American optometric association: define Presbyopia as an age-related visual impairment. It is a refractive condition that is very common and occurs mostly at 35 – 40 years of age. It results from the gradual decrease in accommodation power. Accommodation is the process by which the eye adapts in order to obtain a clear image of near objects (less than 6 mt. distance). When a person focuses on a near object, the ciliary muscles of the eye contract, resulting in a change in the shape of the crystalline lens so that light from the object focuses on the retina instead of behind it. At greater distance accommodation is not required as light from distant objects focuses on the retina anyway (in people who don't have refractive error). In a person above the age of 40 years, the

crystalline lens becomes less flexible, thus its ability to change its shape is reduced.

**PRESBYOPIA:** Presbyopia is not a refractive error but a physiological condition of gradual loss of accommodation power due to an age-related decrease in the elasticity of the lens capsule and lens substance. Besides lenticular changes, loss of ciliary muscle function is also implicated in the development of presbyopia<sup>6</sup>. The loss of the eye's ability to change focus to see near objects. The reasons for this loss of the power of accommodation are not yet fully known. It is conventionally said to be due to the lens becoming less elastic with time. Presbyopia is associated with aging. It occurs in everyone. The first sign is often the need to hold reading material farther away. By age 40 or so, when the eyes can focus no closer than a yard (a meter) or two away, almost everyone needs glasses to read a newspaper or thread a needle. *The word "Presbyopia" comes from the Greek for "elderly vision."*

Presbyopia can be classified into five types<sup>8</sup>-

### 1. Incipient Presbyopia

Incipient presbyopia represents the earliest stage at which symptoms or clinical findings document the near vision effects of the condition. In incipient presbyopia--also referred to as borderline, beginning, early, or pre-presbyopia--reading small print requires extra effort. Typically, the patient's history suggests a need for a reading addition, but the patient performs well visually on testing and given the choice, may reject a near vision prescription.

### 2. Functional Presbyopia

When faced with gradually declining accommodative amplitude and continued near task demands, adult patients eventually report visual difficulties that clinical findings confirm as functional presbyopia

### 3. Absolute Presbyopia

As a result of the continuous gradual decline in accommodation, functional presbyopia progresses to absolute presbyopia. Absolute presbyopia is the condition in which virtually no accommodative ability remains.

#### 4. Premature Presbyopia

In premature presbyopia, the accommodative ability becomes insufficient for the patient's usual near vision tasks at an earlier age than expected due to environmental, nutritional, disease-related, or drug-induced causes.

#### 5. Nocturnal Presbyopia

The condition in which near vision difficulties result from an apparent decrease in the amplitude of accommodation in dim light conditions is referred to as nocturnal presbyopia. Increased pupil size and decreased depth of field are usually responsible for this reduction in the range of clear near vision in dim light.

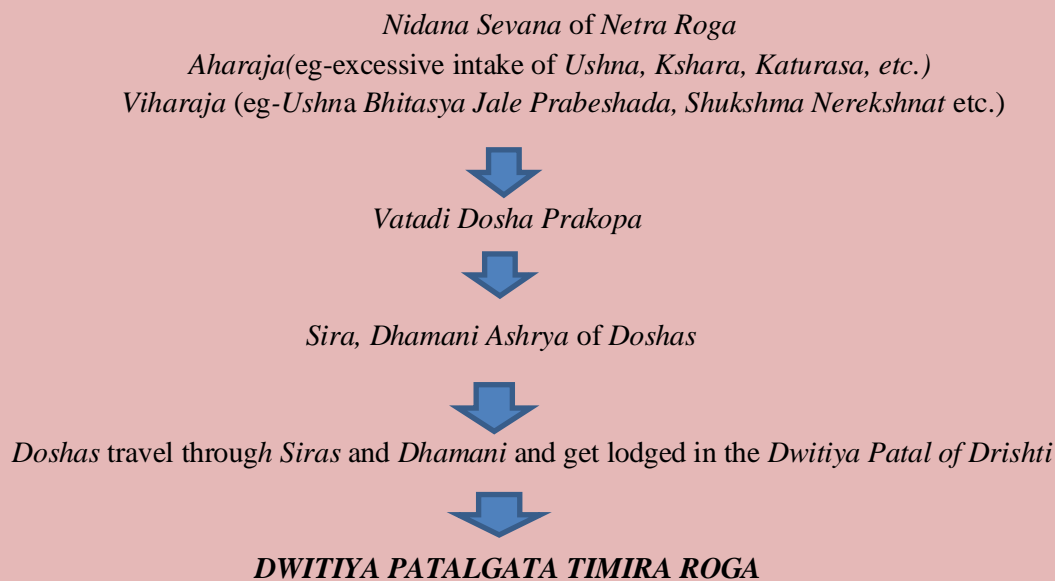
**PREVALENCE-** The prevalence of presbyopia is higher in societies in which larger proportions of the population survive into old age. Presbyopia was estimated to affect more than 1 billion people globally in 2005<sup>9</sup>. People with presbyopia are more likely in an

urban area of a more developed country with higher health expenditure and lower quality. High-quality prevalence data were available only for 4 countries – Tanzania (58%), Brazil (83%), India (93%), and Timor-Leste (43%). Southern India found a prevalence of 55% in people aged group 35 years and older. Studies have reported a 62% prevalence of Presbyopia with advancing age. The increase in Presbyopia patients is predicted from 1.4 billion by 2020 to 1.8 billion in 2050 globally<sup>10</sup>.

#### ETIOLOGY OF TIMIRA:

*Acharya Charaka* has broadly classified the causes as misuse, overuse, and disuse of the senses in respect of function and duration and has regarded them as “Volitional transgression”. i.e., Excessive gazing at brilliant objects is excessive use, Avoiding looking altogether is disuse and seeing too near, too distant, fierce, frightful, disliked, deformed, and terrifying objects is perverted use of objects<sup>11</sup>.

#### SAMPRAPTI OF DWITIYA PATALGATA TIMIRA



#### PATHOPHYSIOLOGY

Some theories of note include the of:

**Helmholtz:** The classical theory of accommodation proposed by Helmholtz over 150 years ago states that the lens under resting tension is held relatively flat

when viewing objects at a distance. During accommodation, the ciliary muscle contracts and moves both anteriorly and inwardly. This decreases tension on zonular fibers and, in turn, causes increased curvature in the elastic lens resulting in increased focusing power. According to Helmholtz, age-related harden-

ing of lens tissue results in decreased elasticity and thus, decreased distortion of the lens during accommodation.

**Coleman:** Also known as the catenary theory. Coleman proposed that the zonular fibers function like the support pylons of a suspension bridge and determine the natural curvature of the lens. That curvature is in turn modified by the opposing pressures in the anterior and posterior chambers. When the ciliary muscle contracts during accommodation, the curvature steepens, but a pressure gradient is also created between the two chambers causing increased curvature of the lens centrally and relative flattening in the periphery.

**Schachar:** Schachar proposed an alternative theory of accommodation which suggested that, due to the presence and insertion points of equatorial zonular fibers, contraction of the ciliary muscle increases tension on the zonules and lens capsule, causing the characteristic lens shape seen during accommodation. Since the lens continues to grow equatorially throughout life while scleral dimensions remain relatively stable after the first two decades, the result is a gradual slackening of tension in the zonular fibers. The proposed etiology of presbyopia is therefore attributed to the increasing inability of the ciliary muscle to create zonular tension adequate to distort the lens<sup>12</sup>.

## MANAGEMENT

In *Ayurvedic* literature, various treatment modalities are applicable in treating *Dwitiya Patalgata Timira* including *Snehpan*, *Tarpan*, *Putpaka*, *Nasya*, *Anjana*, etc.

### SADHYA / ASADHYATA<sup>13</sup>

1st Patalagata Timira - Sadhya

2nd Patalagata Timira - Krichhasadhya

3rd Patalagata Timira - Yappa

## DISCUSSION

### *Dwitiya Patalagata Timira* as Presbyopia

*Timira* is a disease in which *Patala* or fine membranes, nourished by *Teja*, *Jala*, *Mamsa*, *Meda*, and *Asthi* are held responsible which may probably be related to various intraocular structures participating in accommodation and convergence. Presbyopia also

involves the physiological insufficiency to accommodate the eye for near vision due to hardening of the lens and weakening of ciliary muscle. The involvement of *Patala* by various *Doshas* is responsible for the development of different kinds of refractive errors including Presbyopia. *Acharya Sushruta* has quoted similar clinical features under the broad caption of *Dwitiya Patalgata Timira*, a small fraction of which can be correlated to Presbyopia on the basis of following the facts. The *Dwitiya Patala* here denotes *Medoshrita patal (Dalhana)*. The *Timira* involving *Dwitiya Patala* is characterized by *Vihwala Darshana* and *Gochara Vibhrama*. **Vihwala Darshana (confusing and hazy vision):** The patient visualizes false images of flies, gnats, hairs, webs, circles, flags, mirages, and shiny rings. The patient visualizes as if various objects are moving around him. His vision gets reduced further and sees objects as if they are covered by rain and cloud. **Gochara Vibhrama:** The distant object appears to be closer, and the near object appears to be at a long distance. **Suchipasham Na Pashyate:** The patient is unable to locate the eye of the needle even after tremendous effort. This condition occurs only due to impairment of near vision, which is one of the classical symptoms of Presbyopia as described in the modern literature. So, we can correlate *Dwitiya Patalgata Timira* with Presbyopia.

## CONCLUSION

Presbyopia affects all primates. Blurred vision and the inability to see fine details at the customary near working distance are the hallmarks of presbyopia. When we consider the comparative analysis of symptoms of *Dwitiya Patalagata Timira* with Presbyopia then the symptoms described by *Acharya Susruta* and *Acharya Vagbhata* resemble that of the symptoms of Presbyopia. Thus, *Dwitiya Patalagata Timira* is the *Dr̥stigata Roga* that can be correlated within modern science with Presbyopia. In *Ayurvedic* classical texts, various eye treatments like *Kriyakalpa* like *Tarpana*, *Seka*, *Putapaka*, *Anjana*, and *Ascyotana* are mentioned which have desired results in *Timira*. Apart from its various eye exercises have also been mentioned along with an appropriate lifestyle that will

help to control the disease. Thus, there is a need to study each, and every anatomical structure of the eye explained in different *Samhita* and its comparison with modern science.

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