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Drushti and Patala in Myopia : A Critical Review of Classical Concepts and Contemporary Ophthalmic Correlations.

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Abstract : Background : The important components of Ayurvedic ocular anatomy and physiology described in Shalakyatntra are - Drushti and patala . Concept of Drishti is nothing but visual perception ,on the other hand Patala is described as a layered anatomical-functional concept of the eye.Their precise correlation with contemporary ocular anatomy remains controversial . Myopia particularly high and progressive myopia ,provides an important clinical model for exploring these concepts because it involves both altered visual function and progressive structural changes associated with axial elongation .[1,2].To critically analyse the concepts of Drushti and Patala in the context of myopia and to propose a contemporary structural –functional framework for their scientific investigation.

A narrative critical review was undertaken using classical Ayurvedic descriptions of Drushti ; Patala & Timir , together with contemporary literature on Myopia ,axial elongation ,pathological myopia and ocular imaging .[3,4] Classical descriptions & modern anatomical interpretations were considered separately to avoid unsupported one –to-one anatomical correlations.[3,8]

Classical literature describes Drushti as a central and functionally important component of vision and Patala as a layered concept associated with ocular structure & progressive visual impairment. Contemporary ophthalmology demonstrates that myopia involves an altered relationship between ocular optical power and axial length. Progressive axial elongation may subsequently produce retinal ,choroidal and scleral remodeling ,posterior staphyloma and macular pathology . Although the macula ,fovea ,retina ,pupil and lens have been proposed as possible correlates of Drushti ,available evidence does not establish equivalence with any single structure .Similary ,individual Patalas cannot presently be conclusively mapped onto specific modern ocular layers.

Drushti and Patal may be more appropriately interpreted as integrated structure –function concepts rather than direct anatomical equivalents. Myopia provides a potentially valuable model for investigating these concepts through measurable parameters such as refractive error, axial length ,visual acuity , OCT –derived retinal and choroidal parameters and multimodal imaging.

Prospective interdisciplinary studies integrating Ayurvedic clinical assessment with contemporary ophthalmic investigations are required to validate these proposed correlations and establish an evidence –based framework for Ayurvedic Ophthalmology .

Keywords : Drushti ,Patal ,Myopia,axial elongation ,Timira , Shalkayatantra ,OCT

Introduction:

Vision occupies a central position in human interaction, learning and occupational function. Myopia ,commonly referred to as short-sightedness. Myopia is refractive condition in which parallel rays of light coming from infinity are focuses anterior to retina when accommodation is at rest. The patient experiences reduced distance vision ,while near vision may remain relatively preserved.

Modern Ophthalmology recognizes several forms of Mypia, with axial myopia being the predominant anatomical form.[1] In axial Myopia ,the axial length of Eyeball becomes longer than required for its optical power. Increasing axial length is accompanied by biomechanical and structural changes involving the sclera ,choroid ,retina ,optic disc and posterior pole.[2,9]

Ayurvedic Ophthalmology approaches visual disorders through the framework of Netra Roga and Drushtigat Roga. Among the classical description ,Timira is particularly important because it encompasses progressive visual disturbances associated with involvement of different Patalas. Sushruta provides a detailed description of the Drishti ,Krishna-mandala and Ocular Patalas .[3,4] Several modern Ayurvedic authors thave attempted to correlate Timira with refractive errors, particularly Myopia.[5-8] However ,these correlations vary considerably & remains a need for critical rather than merely assumptive comparison.

AIM

To critically examine the classical concept of Drushti ane Patala in relation to myopia and explore meaningful correlations with contemporary Ophthalmic Anatomy,Physiology and clinical assessment .

OBJECTIVES

1.To review the classical description of Drushti & Patala.
2.To analyse the clinical manifestations of Patalagata Timira.
3.To examine the possible correlation between Timira and Myopia .
4.To compare the Patala concept with contemporary Ophthalmic Anatomy cautiously.
5.To identify limitations in the classical – modern correlation.
6.To propose an integrated framework for Future research .

MATERIALS AND METHODS

Classical descriptions relating to Drushti Patala ,Timir ,Kach and Linganasha were reviewed primarily from Sushrut samhita .[3]Contemporary literature concerning the clinical & anatomical characteristics of Myopia ,axial elongation and associated posterior segment changes was also reviewed.[1,2,9]

Previously published Ayurvedic reviews and clinical studies examining Timira and Myopia were considered for comparison.[5-8] The literature was critically interpreted rather than assuming that classical anatomical terms represent direct equivalents to modern histological structures.

CLASSICAL CONCEPT OF DRUSHTI

Sushruta describes Drushti within the ocular anatomical framework of Krishna-mandala and Patala.The classical description places Drushti in central position within the eye and attributes visual function to this specialized structure.[3]

Modern authors have variously attempted to correlate Drushti with the central visual apparatus ,including the macular region.[4,5].However ,this should be regarded as an interpretative correlation rather than a definitive anatomical identification.

The distinction is important because ancient Ayurvedic anatomical terminology

was developed using a different conceptual and observational framework from modern histology ,microscopy and ocular imaging.

CLASSICAL CONCEPT OF PATALA

Sushruta describes six Patalas in the eye as a whole,of which four described in relation to the eye proper. The classical text associates different pathological manifestations with involvement of successive Patalas.[3,4]

The four ocular Patalas have historically been interpreted by Ayurvedic scholars in relation to progressively deeper structures of the eye. However different commentators and modern authors have proposed somewhat different anatomical correlations.[5,6]

Therefore ,it is preferable to describe Patala as a classical anatomical – pathological framework rather than forcing a direct correspondence such as : [4-6]

One Patala = not necessarily One modern ocular layer.

Such a direct equation is not sufficiently supported by contemporary anatomical evidence .

TIMIRA AND PATALGAT VISUAL DISTURBANCE

Timira occupies an important position among Drishtigat Rogas . Sushruta describes visual disturbances according to the depth of involvement.[3]

In superficial involvement ,objects may appear indistinct or hazy .With deeper involvement, additional visual phenomena and disturbances in spatial perception are described. In the second patala description ,Sushruta mentions altered perception of near and distant objects and specifically refers the Myopia & Biopia in the context of refractive difficulty.[3]

This observation is especially significant when discussing the relationship between Timira & refractive errors.

It should nevertheless be emphasized that the presence of the term Myopia in the classical text does not establish that the entire modern concept of axial myopia was described in exactly the same pathological terms as today.[5-8]

MYOPIA :CONTEMPORARY OPHTHALMIC CONCEPT

Myopia is a refractive state in which the optical system of the eye focuses distant parallel rays in front of the retinal plane when accommodation is relaxed.[1]

Major clinical characteristics include:

- Reduced uncorrected distance visual acuity.
- Relatively preserved near vision in uncomplicated myopia.
- Negative spherical Refractive Error .
- Improvement of distance vision with appropriate concave correction.[1]

In axial myopia ,excessive axial elongation is the major structural factor.

The modern assessment of myopia therefore extends beyond visual acuity & refraction & increasingly incorporates:

- Cycloplegic refraction .
- Axial length measurement
- Keratometry
- Dilated fundus examination.
- Optical coherence tomography where indicated.
- Documentation of myopic retinal & optic – disc changes.

AXIAL ELONGATION AND STRUCTURAL CHANGES

Increasing axial length is associated with mechanical stretching & remolding of ocular tissues.[1,2]

Contemporary histological & imaging studies have demonstrated changes including :

- Retinal & retinal pigment epithelial alterations
- Choroidal Thinning
- Scleral thinning & remolding
- Optic-disc ovalization .
- Changes in Bruch's membrane configuration
- Enlargement of parapapillary regions
- Alteration of Retinal vascular configuration.
- Progressive posterior pole changes in high/pathological myopia.

These findings are important when discussing the Patala concept because they demonstrate that increasing myopia is not merely an optical phenomenon but may also involve structural changes throughout the posterior segments.[2,9]

CLASSICAL –CONTEMPORARY CORRELATION

Classical description

Possible contemporary correlation

Ayvakt Darshan –Reduced visual acuity-Reduced visual clarity

Difficulty seeing distant objects – Myopic distance blur

Timira described in refractive context – Myopic refractive error

Progressive Patala involvement – Conceptual model of progressive ocular dysfunction

Deeper ocular involvement – Increasing structural/functional pathology

Advanced visual impairment – Severe visual dysfunction /pathological ocular disease.

These correlations should be interpreted at the clinical & conceptual level, tather than as proof of direct anatomical identity.

POSSIBLE CORRELATION OF PATALA WITH MODERN ANATOMY

A frequently proposed approach is to compare the successive Patalas with progressively deeper ocular structures.[5,6]

However, this approach has significant limitations.

Modern Ophthalmology divides the eye into precisely characterized structures such as :

- Corneal
- Anterior Chamber
- Lens
- Viterous
- Retina
- Retnal pigment epithelium
- Choroid
- Sclera
- Optic Nerve.

In contrast ,the Patala concept incorporates anatomical ,functional and pathological dimensions.

Consequently ,the more academically defensible approach is :

Patala – Progressive depth/ severity of ocular dysfunction

Rather than :

Patal I - Specific modern histological layer I
Patala II - Specific modern histological layer II
This distinction improves specific validity.

WHY MYOPIA CAN BE CORRELATED WITH TIMIR

Several clinical features support a relationship between selected manifestations of Timira and Myopia.

1.Distance Visual Acuity-
Reduced distance vision is the cardinal clinical manifestation of uncorrected myopia and is also an important feature in classical description used by Ayurvedic authors to interpret Timira.[3,5]

2.Refractive component-
Sushruta uses Myopia in description of reduced visual acuity provides an important historical basis for discussing refractive error in the classical literature.[3]

3.Progressive Concept –
Classical descriptions consider increasing ocular involvement to be associated with increasing visual dysfunction .[3,4]
Contemporary high & pathological myopia similarly demonstrate increasing risk of structural ocular abnormalities.[2,9]

4.Functional-to –structural progression-
The classical framework progresses from visual disturbance toward more sever loss of vision. Contemporary pathological Myopia can also progress from relatively uncomplicated refractive error to structural complications involving the retina ,choroid ,sclera and optic nerve.[2,9]

IMPORTANT LIMITATIONS OF THE CORRELATION

The correlation between Timira and Myopia should not be overstated.
First , Timira is a classical disease concept and not necessarily correspond exclusively to modern myopia.[5,7,8]
Second ,classical Patala cannot be equated with modern anatomical layers without qualification.[5,6]
Third, modern myopia is defined quantitatively through refractive error and increasingly through biometric parameters such as axial length.[1]
Fourth, visual improvement after an intervention does not automatically demonstrate reduction of axial elongation.
Earlier Ayurvedic clinical studies of interventions such as Akshitarpana, Nasya ,Saptamrita Lauha and yoga have reported variable outcomes, but available studies are generally small & heterogeneous

AYURVEDIC MANAGEMENT : RESEARCH PERSPECTIVE

Ayurvedic Ophthalmology describes various preventive and therapeutic approaches for maintaining ocular health ,including Kriyakalpa ,Tarpana,Anjana,Nasya,Padabhyanga ,Dietary measures and Rasayana approaches.
Some contemporary Ayurvedic publications have investigated these approaches in Myopia. However, the current evidence base is not sufficient to establish that these interventions prevent or reverse axial elongation.
Further studies should therefore incorporate objective outcomes such as :

- Spherical equivalent refraction
- Cycloplegic Refraction
- Axial length
- Corneal parameters
- Choroidal thickness

- OCT parameters
- Best-corrected visual acuity
- Myopia progression rate

This would allow traditional therapeutic concepts to be evaluated using internationally accepted Ophthalmic endpoints.

PROPOSED INTEGRATIVE MODEL

A clinically useful model can be developed as follows:

CLASSICAL DESCRIPTION

- **PATAL-WISE VISUAL DYSFUNCTION**
- **CLINICAL PHENOTYPE**
- **REFRACTION + AXIAL LENGTH**
- **FUNDUS/ OCT AS INDICATED**
- **MYOPIA RISK AND PROGRESSION ASSESSMENT**
- **INTEGRATED MANAGEMENT AND FOLLOW-UP**

This approach respects the classical framework while avoiding unsupported anatomical equivalence.

FUTURE RESEARCH DIRECTIONS

Future research should move beyond purely descriptive correlations

Suggested research questions

1.Does the classical Patala-based staging correlate with objective axial length?

2.Is there a relationship between Patala-wise clinical features and degree of refractive error?

3. Can Ayurvedic interventions influence the rate of axial elongation?

4.Can OCT demonstrate measurable structural changes following Ayurvedic interventions?

5. Can standardized classical clinical parameters be developed for prospective studies?

6. Can an integrated Ayurvedic-ophthalological classification improve documentation of Myopic progression?

Well- designed randomized controlled trials with adequate sample size, standardized diagnostic criteria and objective biometric endpoints are requied.

DISCUSSION

The classical concept of Drushti and Patala represents an important contribution to the historical development of Ayurvedic Ophthalmology .Sushruta's descriptions demonstrate an attempt to understand ocular structure ,visual function and progressive visual pathology within the conceptual framework of his time.[3]

The contemporary concept of Myopia ,however ,is substantially more precise

because it is supported by an objective optical, biometric, imaging and histo-pathological measurements.[1,2,9]
The most meaningful bridge between the two systems is therefore not a forced anatomical equivalence but a clinical-functional correlation.
The description of impaired distant vision and the classical mention of Myopia provide a particularly interesting basis for this correlation.[3]
At the same time, modern evidence demonstrates that Myopia-especially high and pathological myopia-is associated with complex structural changes extending beyond the optical system. [2,9]
Thus, Patala may be understood as a classical model describing progression from superficial visual disturbance toward deeper ocular pathology ,while contemporary Ophthalmology provides the tools to objectively characterize the anatomical and functional changes involved.

CONCLUSION

The concept of Drushti, Patala and Timira provide an important classical framework for understanding visual disorders in Ayurveda.[3,4]
Myopia can reasonably be correlated with selected manifestations of Timira, particularly impaired distance vision and refractive difficulty. Sushruta's reference to Myopia in context of refractive disturbance is particularly noteworthy.[3]
However, the Patalas should not be presented as exact equivalents of individual modern ocular layers. The correlation is better understood as conceptual ,clinical and pathological rather than strictly anatomical.[5-8]
Contemporary Ophthalmological parameters – particularly cycloplegic refraction ,axial length ,fundus examination and OCT –should be incorporated into future Ayurvedic research.[1,2,9]
A scientifically robust integrative model should therefore preserve the classical terminology while evaluating its clinical relevance through objective modern ophthalmic measurements.

REFERENCES

1.SUSHRUT SAMHITA SHARIR STHAN,CHAPTER 1 :UTTAR TANTRA ,CHAPTER 7 .
2. KUMAR A,OJHA K . A CRITICAL REVIEW ON TIMIR(MYOPIA) .INT J APPL AYURVED RES.2022:5(9); 737-741
3.JONAS JB ,PANDA-JONAS S.MYOPIA: HISTOLOGY ,CLINICAL FEATURES,AND POTENTIAL IMPLICATIONS FOR THE ETIOLOGY OF AXIAL ELONGATION.PROG RETIN EYE RES.2023; 92:101156
4.JONAS JB, ET AL.CLINICAL AND ANATOMICAL FEATURES OF MYOPIA.ASIA PAC J OPHTHALMOL.2024.
5.CONCEPT OF PRATHAM PATALGAT TIMIRA IN CORRELATION WITH MODERN COUNTERPART : A REVIEW AYUSHDHARA .2020;7(3) : 2753-2756.
6.A CLINICAL STUDY ON AKSHITARPANA AND COMBINATION OF AKSHITARPANA WITH NASYA THERAPY IN TIMIR WITH SPECIAL REFERENCE TO MYOPIA .J. AYURVEDA INTEGR MED.2011.
7. COMPARATIVE STUDY ON THE EFFECT OF SAPTAMRUT LAUHA AND YOGA THERAPY IN MYOPIA .J.AYURVEDA INTEGR MED.2014.
8. JAT DK,ET AL. COMPARATIVE ANALYSIS OF TIMIRA AND MYOPIA : INSIGHTSFROM AYURVEDIC AND MODERN PERSPECTIVES.J.AYU INT MED.SCI.2024 ; 9(5): 159-166.
9.THAKUR A, GOUD PK ,RAJAGOPALA M. DECIPHERING TIMIRA : A CRITICAL APPRAISAL OF VISUAL PATHOLOGIES IN AYURVEDA.INT RES J AYURVEDA YOGA.2025.
10. GAUTAM A, CHAURASIYA A.TIMIR TO MYOPIA : AN AYURVEDIC MODERN CORRELATION AND SCOPE OF PREVENTIVE OPHTHALMOLOGY.ANUSANDHANVAKKAR I.2025.