

RESTORATION OF VISUAL FUNCTIONS IN KERAATOCONUS THROUGH
AYURVEDIC INTERVENTIONS: A CASE REPORTDr. Rachana K.*¹ and Dr. Sujathamma K.²¹Post Graduate Scholar, Department of PG Studies in Shalakya Tantra, Sri Kalabyraveshwara swamy Ayurvedic Medical College Hospital and Research Centre, Bengaluru, Karnataka, India.²Professor and HOD, Department of PG Studies in Shalakya Tantra, Sri Kalabyraveshwara swamy Ayurvedic Medical College Hospital and Research Centre, Bengaluru, Karnataka, India.

*Corresponding Author: Dr. Rachana K.

Post Graduate Scholar, Department of PG Studies in Shalakya Tantra, Sri Kalabyraveshwara swamy Ayurvedic Medical College Hospital and Research Centre, Bengaluru, Karnataka, India.

Article Received on 21/05/2025

Article Revised on 11/06/2025

Article Accepted on 01/07/2025

ABSTRACT

A 20-year-old female presented with progressive blurring of distant vision, photophobia, watering of eyes, and headache. Corneal topography findings were consistent with keratoconus, revealing increased keratometric values and stromal thinning. Based on the clinical presentation and pathogenesis, the condition was correlated with *Vataja Dwiṭīya Patalagata Timira* as described in *Ayurvedic* literature. The patient was managed with a comprehensive *Ayurvedic* protocol, including *Snehapāna*, *Virechana*, *Nāsyakarma* with *Gandha Taila*, *Tarpana* using *Mahātriphālādi Ghṛta*, and internal administration of *Saptāmṛta Loha* and *Mahātriphālādi Ghṛta*. Post-treatment evaluation showed marked improvement in visual acuity and significant relief from associated symptoms. This case highlights the potential efficacy of classical *Ayurvedic* interventions in the early management of keratoconus.

INTRODUCTION

Keratoconus is a progressive, bilateral, ectatic disorder of the cornea characterized by thinning and conical protrusion of the central or paracentral cornea.^[1] Approximately 50% of fellow eyes in unilateral cases may progress to keratoconus within 16 years.^[2] It is considered a leading indication for corneal transplantation, especially in Western countries.^[3] It typically manifests during adolescence or early adulthood and progresses over the following decades, often stabilizing by the fourth decade of life.^[4]

A population-based study in rural India reported a prevalence of 2.3%^[5], with males reportedly being eight times more affected than females.^[6] The etiology is multifactorial, involving both genetic and environmental factors. Genetic predisposition is evidenced by familial inheritance patterns, discordance in dizygotic twins^[7], Environmental factors include chronic eye rubbing, contact lens wear, and ocular allergies.^[8] Associations with systemic genetic disorders such as Down syndrome, Ehlers–Danlos syndrome, Marfan syndrome, and osteogenesis imperfecta^[9], Ocular associations include vernal keratoconjunctivitis, blue sclera, aniridia, Leber congenital amaurosis, retinitis pigmentosa, and habitual eye rubbing.

Though previously classified as a non-inflammatory disorder, recent studies suggest the involvement of

inflammatory mediators in its pathophysiology.^[10] The hallmark pathological changes include increased proteolytic activity leading to collagen degradation, stromal thinning, and weakening of corneal biomechanics, ultimately resulting in a cone-shaped deformation of the cornea.^[11]

Clinically, keratoconus presents with reduced and distorted visual acuity, glare, and photophobia. Diagnostic signs include Munson's sign, Fleischer's ring, Vogt's striae, oil droplet reflex, distorted mires on Placido's disc, and a scissoring reflex on retinoscopy.^[12] Corneal topography remains the gold standard for diagnosis and monitoring of progression.^[13] Conventional management includes spectacles, rigid gas-permeable contact lenses, corneal collagen cross-linking, intracorneal ring segment implantation, and keratoplasty in advanced stages.^[14]

In *Ayurveda*, keratoconus can be correlated with *Vātaja Dwiṭīya Patalagata Timira*, a subtype of *Drṣṭigata Roga* characterized by blurring of distant vision, visual distortion, and diplopia. Management principles focus on *Vāta*-pacifying therapies including *Virechana*, *Nasya*, *Tarpana*, *Basti*, *Śirobasti*, *Lepa*, and *Śeka* among others.^[15]

This case report presents a patient with keratoconus who showed substantial clinical improvement through

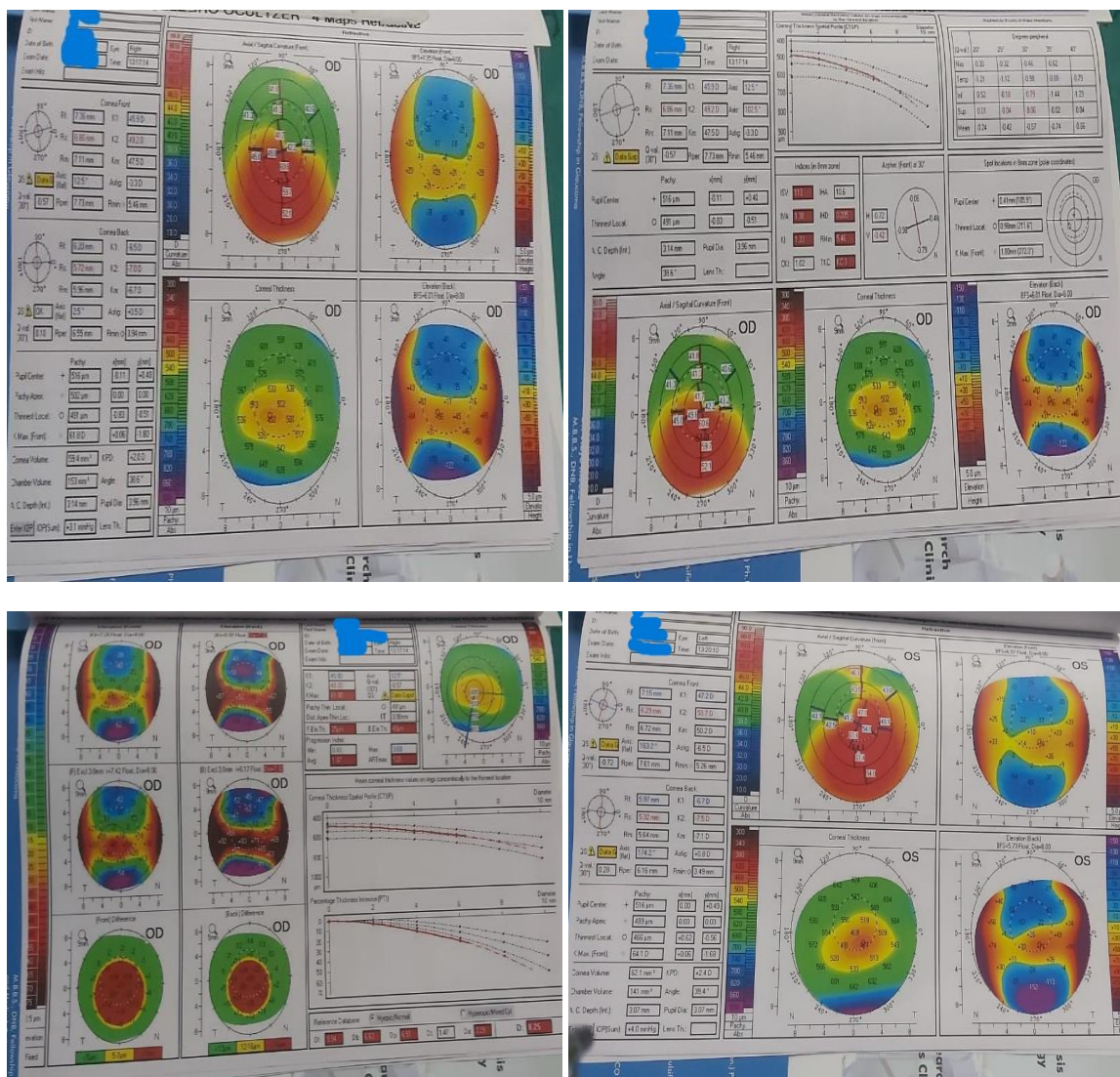
classical *Ayurvedic* interventions. Informed consent was obtained from the patient for publication of the clinical data and treatment details.

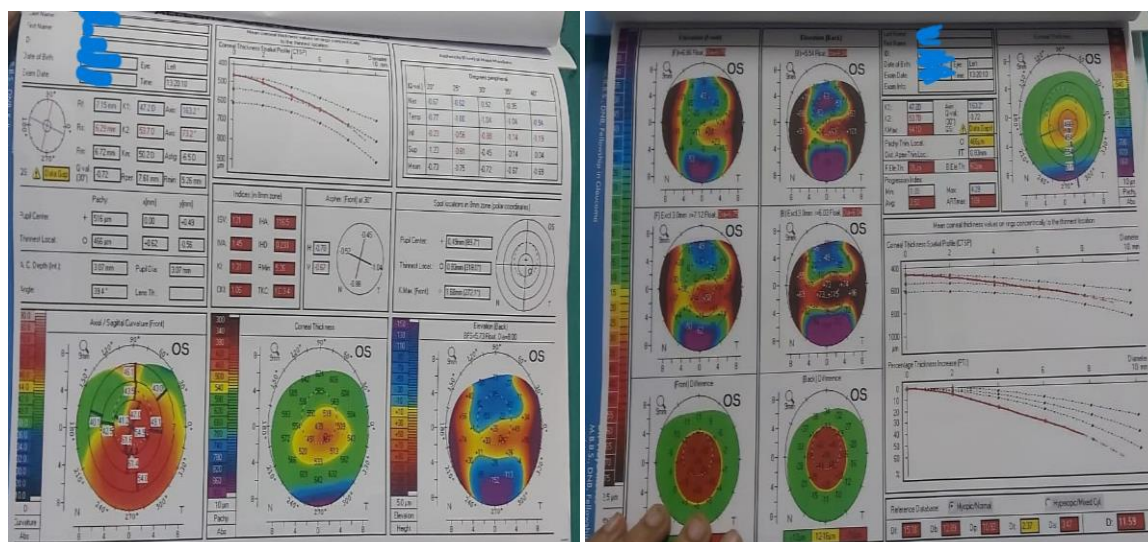
CASE REPORT

A female patient aged 20 years visited *Shalakya tantra* OPD of Sri Kalabyraweshwara Swamy *Ayurvedic* medical college hospital and Research centre with complaints of blurriness of vision in both eyes for distant objects and watering of eyes since 1 year, associated with headache, photophobia and double vision since 6 months. In 2010 patient visited eye hospital with complaints of itching in both eyes, on examination she was diagnosed with myopia of -0.5D and was prescribed with corrective spectacles. After 2 years the myopic refractive power increased to 1.5 dioptre in right eye and 2 dioptre in left eye, In 2015 during regular eye check up her myopic refractive power was increased to 2D in right eye and 2.5D in left eye and was prescribed with respective corrective spectacles. Over the years the patient experienced gradual deterioration in visual acuity with a progressive myopic refractive error, requiring frequent changes in spectacle prescription. In 2018

patient was diagnosed with dry eye due to which she had frequent itching in eyes and she developed the habit of frequent eye rubbing, she was prescribed with hylupro eye drops for the management of the above condition. In 2024 patient started experiencing frequent headache double vision, photophobia and watering of eyes. During her routine ophthalmologic evaluation, she was found to have developed astigmatism, with cylindrical refractive errors of -1.5 diopters (D) in the right eye and -2.75 D in the left eye. The spherical refractive errors had also progressed to -3.0 D in the right eye and -3.5 D in the left eye. Further evaluation using corneal topography demonstrated irregular astigmatism along with signs of corneal thinning. Surgery was recommended to the patient for the above condition, but the patient refused it and visited *Shalakya* opd of SKAMC seeking *Ayurvedic* treatment. No significant findings were noted in her past medical or family history.

Her unaided visual acuity was 6/60 in both eyes. With aid in the right eye it was 6/9 and in left eye 6/18. Munson's sign and oil droplet reflex was positive in both eyes.





Corneal Topography findings

Parametre	Right eye	Left eye
K1	45.9	47.2
K2	49.2	53..7
R1	7.36mm	7.15mm
R2	6.66mm	6.29mm
Kmax	61.8D	64.1D
Kmean	47.5D	50.2D
Pachy apex	502µm	489µm
Thinnest location	491µm	466µm

TREATMENT PROTOCOL

Treatment	Drug and Dose	Duration
Deepana -pachana	Tab.chitrakadi vati 1-0-1(b/f)	3 days
Snehapana	Mahatriphaladi ghrita	4 days
Sarvanga Abhyanga and Bashpa sweda	Dhanwantari Taila	3days
Virechana	Trivrit lehya-60g	
Nasya	Gandha taila-6drops	7 days
Tarpana	Mahatrriphaladi ghrita	7 days

Internally

Saptamruta Loha was administered in a dose of 1 tablet at night, along with honey and ghee in unequal proportions.

Mahatriphaladi ghrita 0-0-1tbsp with warm water.

RESULT

Visual acuity after Virechana

DISTANT VISION (WITHOUT AID)	DISTANT VISION (WITH AID)
BE-6/24	6/9(P)
RE-6/36	6/9(P)
LE-6/36	6/12(P)

Visual acuity after Nasya and Tarpana

DISTANT VISION (WITHOUT AID)	DISTANT VISION (WITH AID)
6/18	6/6(P)
6/24	6/6(P)
6/24	6/9(P)

OVERALL OBSERVATION AFTER TREATMENT

Criteria	Before treatment		After treatment	
Visual acuity	Without aid	with aid	Without aid	with aid
	BE-6/60	6/9(P)	BE-6/18	6/6(P)
	RE-6/60	6/9(P)	RE-6/24	6/6(P)
	LE- 6/60	6/18(P)	LE-6/24	6/9(P)
Photophobia	Severe		Mild	
Watering of eyes	Severe		Absent	
headache	Frequent		Frequency reduced	

DISCUSSION

Keratoconus can be compared with *Dwiteeya Patalagata Timira* which is one of the *Drishtigata Rogas* explained in *Ashtanga Hridaya*. *Nidana* that was observed in this case was frequent eye rubbing and intake of *Rooksha* and *Katu Ahara*. Frequent rubbing of eyes acts as mechanical trauma leading to *Vata Prakopa* which in turn causes *Dhatukshaya* i.e thinning of corneal stroma and leading to keratoconus. Excessive *Rooksha* and *Katu Ahara* intake leads to *Vata Dosha Prakopa*. The vitiated *vata Dosha* moves upward through *Urdhwagami siras* localize in *Drishtimandala* and causes *Dwiteeya Patalagata Timira*.

Virechana was selected as the first line of treatment in this case, as it is the primary therapeutic intervention indicated in *Vataja Timira*, where *Snehapanottara Virechana* is specifically advised.^[16] Preceding procedures like *Abhyanga* and *Swedana* facilitate the mobilization of vitiated *Doshas* and relieve *Srotorodha* (obstruction of bodily channels), thereby supporting the proper directional movement of *Vata* and other *Doshas*.^[17] Although *Virechana* is primarily known for expelling *Pitta* and *Kapha*, it also plays a significant role in regulating *Vata Dosha* by promoting *Vatanulomana*, contributing to balancing of *Doshas*.

In this case *Nasya* was given with *Gandha Taila* for 7 days. It is *Vatahara*, *Balya* and *Snigdha* in property. It is mentioned in *Bhagna Pratishedha Adhyaya*. As we have discussed earlier that due to *Vata Prakopa* there might be *Dhatukshaya* due to which there will be thinning of corneal stroma, as *Gandha Taila* is having *Snigdha* and *Balya* properties it helps in nourishing the cornea and prevents further progression of the disease.

In this case we have used *Mahatriphaladi Ghrita* for *Tarpana* which is having *Vata-Pitta Hara* properties. The corneal epithelium and endothelium possess lipophilic characteristics, while the stroma is predominantly hydrophilic in nature. Hence the lipophilic and hydrophilic drugs are effectively delivered into cornea. As lipids are having high molecular weight due to their mechanical pressure it might also help in regularizing the corneal curvature, thereby reducing astigmatism and enhancing visual acuity.

CONCLUSION

This case report highlights the potential of *Ayurvedic* interventions in the effective management of

keratoconus, a progressive corneal ectatic disorder. By correlating keratoconus with *Vataja Dwiteeya Patalagata Timira*, a comprehensive treatment approach was implemented involving *Snehapana*, *Virechana*, *Nasya*, and *Tarpana*. Significant improvements were observed in visual acuity, photophobia, watering of eyes, and headache without surgical intervention. The clinical outcomes suggest that *Ayurvedic* treatment protocols can effectively manage early-stage keratoconus by addressing the underlying *Dosha*, nourishing ocular tissues, and potentially stabilizing disease progression. However, larger-scale studies and objective long-term follow-ups are needed to further validate these outcomes.

REFERENCES

- Asimellis G, Kaufman EJ. Keratoconus. <https://www.ncbi.nlm.nih.gov/books/NBK470435/>
- Salmon JF. Kanski's Clinical Ophthalmology: A Systematic Approach. 9th ed. Edinburgh: Elsevier, 2020; 248.
- Asimellis G, Kaufman EJ. Keratoconus. <https://www.ncbi.nlm.nih.gov/books/NBK470435/>
- Asimellis G, Kaufman EJ. Keratoconus. <https://www.ncbi.nlm.nih.gov/books/NBK470435/>
- Das AV, Deshmukh RS, Reddy JC, et al. Keratoconus in India: Clinical presentation and demographic distribution based on big data analytics. Indian J Ophthalmol, 2024; 72(1): 105-110.
- Das AV, Deshmukh RS, Reddy JC, et al. Keratoconus in India: Clinical presentation and demographic distribution based on big data analytics. Indian J Ophthalmol, 2024; 72(1): 105-110.
- Asimellis G, Kaufman EJ. Keratoconus. <https://www.ncbi.nlm.nih.gov/books/NBK470435/>
- Asimellis G, Kaufman EJ. Keratoconus. <https://www.ncbi.nlm.nih.gov/books/NBK470435/>
- Salmon JF. Kanski's Clinical Ophthalmology: A Systematic Approach. 9th ed. Edinburgh: Elsevier, 2020; 248.
- Asimellis G, Kaufman EJ. Keratoconus. <https://www.ncbi.nlm.nih.gov/books/NBK470435/>
- Soiberman U, Foster JW, Jun AS, Chakravarti S. Pathophysiology of Keratoconus: What Do We Know Today. Open Ophthalmol J., Jul. 31, 2017; 11: 252-261. doi: 10.2174/1874364101711010252. PMID: 28932341; PMCID: PMC5585454.

12. Sihota R, Tandon R. Parsons' Diseases of the Eye. 22nd ed. New Delhi: Elsevier; 2023, chapter-15, 216.
13. Sihota R, Tandon R. Parsons' Diseases of the Eye. 22nd ed. New Delhi: Elsevier; 2023,chapter-15, 216.
14. Salmon JF. Kanski's Clinical Ophthalmology: A Systematic Approach. 9th ed. Edinburgh: Elsevier, 2020; 248.
15. Vagbhata, Ashtanga Hridaya with Sarvangasundara commentary of Arunadatta and Ayurvedarasayana of Hemadri, edited by Pandit Harisastri Paradkar Vaidya. Varanasi: Chaukhambha Surbharati Prakashan; Reprint 2015, Ch. 13, Shloka 47.
16. Sushruta, Sushruta Samhita with Nibandha Sangraha commentary of Dalhana and Nyaya Chandrika Panjika of Gayadasa, edited by Vaidya Yadavji Trikamji Acharya. Varanasi: Chaukhambha Orientalia; Reprint, 2014; Ch.17, Shloka 29-30.
17. Rathi S. A conceptual study: Ayurvedic management and prevention of Timira. World journal of pharmaceuticals and life sciences, 2023; 9: 8.