

**CONTACT LENSES INDUCED DRY EYE (SHUSHKAKSHIPAKA) AND IT'S
AYURVEDIC MANAGEMENT.****Dr. Rajesh L. Gadhiya***

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INTRODUCTION

Contact lens wearers stop wearing their lenses (about 16 %) because of dryness, followed by blurry and changeable vision and about half of contact lens wearers have dryness due to hypoxic condition of cornea induced by the lenses themselves.^[1] Two mechanisms have been proposed to explain this effect. First, the eyelid blinking over the unnatural surface created by the lens causes the tear film to change and evaporate. Second, wearing contact lenses decreases corneal sensation—thereby decreasing the stimulus to create tears and producing a relative aqueous deficiency on the surface of the eye through afferent reflex.^[2] In *Ayurvedic* classics all signs & symptoms of Dry eye syndrome (DES) i.e. dryness, blurring of vision, foreign body sensation, stiffness etc. are explained under the heading of *Shushkakshipaka* i.e. *Shushkata* (Dryness) leading to *Paka* (inflammation) & vice versa.^[3] We usually reach a diagnosis of dry eye with contact lenses after ruling out other causes of discomfort - edema, allergy or contact lens deposits, and then examining the eyelids, tear production rate, tear film breakup time and corneal or conjunctival staining for clues. DES is managed by artificial tears – Carboxy Methyl Cellulose (CMC), cyclosporine 0.05 % - treats inflammation, Omega 3-fatty acids – nutritional supplements. But preservatives used in these eye drops again causes dry eye.^[4,5] whereas in *Ayurvedic* classics we find the treatment protocol for *Shushkakshipaka* with concept of Topical administration of drugs like *Aschyotana*, *Parisheka*, *Anjana*, *Tarpana*, *Putapaka*, & systemic *Vata-Pittahara* medication with medicated *Ghrita*^[6], which not only substitutes tears but also helps to restores normal physiology of tears & treats underlying causes of dry eye as well. Here's with the hope to diminish patients' symptoms so they can continue wearing their lenses comfortably. Thus the holistic approach of *Ayurveda* has a lot to contribute in such vision endangering ocular problem.

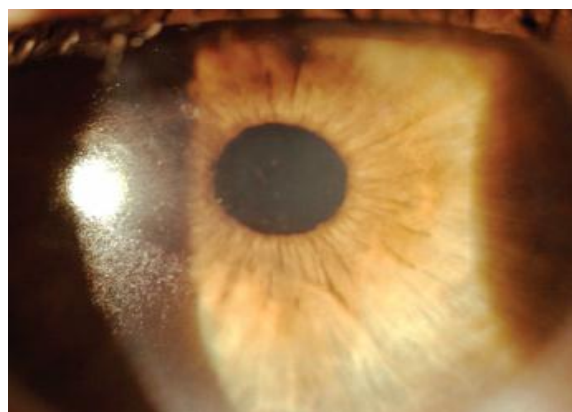
**Impact of Contact Lens on Ocular Surface
Changes in Function & Morphology of Cornea**

The effects of extended contact lens wear on the cornea have been studied extensively and are well-documented. When determining the effects of long-term contact lens use on the cornea, many studies do not differentiate between users of hard and soft contact lenses, while studies that have made this differentiation have found similar results. This is probably because most contact lens-induced changes to the cornea are caused by hypoxia, which occurs as long as any physical barrier to the surface of the cornea is present. In certain instances, hard contact lenses were shown to cause the same changes in corneal structure as soft contact lenses, though these changes were more dramatic because rigid lenses are capable of inflicting greater trauma on the eyes.^[7]

Structural Changes of Cornea

Long-term use of soft hydro-gel contact lenses can alter the following changes in the cornea: epithelial oxygen uptake, epithelial thickness, stromal thickness, and corneal endothelial morphology. Furthermore, the

formation of epithelial vacuoles and micro-cysts has been observed following long-term contact lens wear.^[8] Vacuoles are fluid-filled chambers that begin to appear one week after extended contact lens use begins; their number increases over time with extended contact lens wear.



Increased corneal curvature is yet another change known to arise from long-term contact lens wear^[7]; this increase

in corneal curvature can be as much as 0.5 dioptres greater than normal.^[9] Corneal surface irregularity and asymmetry are also caused by long-term contact lens wear; these problems are sometimes correlated with astigmatism in contact lens wearers and are thought to be caused by hypoxia, surface molding, and chronic and mild trauma to the cornea from contact lens use.^[7]

Long-term use of PMMA or thick hydro-gel contact lenses have been found to cause corneal warpage (shape distortion).^[10]

Management through Ayurvedic Science

No remedial measures for the prevention and care of contact lens induced dry eye except use of artificial tear drops which acts only by lubricating ocular surface. This prevalence in modern ophthalmology opens the door to the other systems of medicine to suggest, experiment and contributes the drugs to alleviate or to check the deterioration. This challenge of the time was accepted by the *Ayurvedic* scholars, as they believed that nature provides both the diseases and drugs together. Eyes were greatly valued by ancient Indians and much importance has been accorded to their protection.

Aschyotana

Ashchyotana with decoction of *Darvi* and *Prapaundrika*^[11] & *Ashchyotana* with *Manjihstha*, *Madhuka*, *Kalanusari Sariva*, *Lodhra*, *Laksha* and *Prapaundrika* reduces congestion, burning sensation etc in the eye and symptoms of dry eyes are relieved because when drugs employed in the conjunctival sac in the form of aqueous solution and the period of tissue contact is very less; hence the bio-availability is very short.^[12] 80% of each drop is instantaneously drained through the naso lacrimal duct.

Parisheka

Various *Yogas* for *parisheka* is mentioned in *Samhitas* in treatment of *Shushkakshipaka*. *Parisheka* is more useful in aqueous deficient conditions of dry eye in which tears gets stabilized with increased osmolarity of *Parisheka*. Absorption of *Parisheka* is more as compared to *Aschyotana* because comparative drug quantity used as well as tissue contact time is also more.^[12]

Anjana (Collyrium)

Raskriya Anjana consisting of *Saindhava*, *Devadaru* and *Shunthi* pasted with *Matulunga* juice, *Ghrita*, breast milk and water & *Anjana* prepared from *Shunthi* rubbed with *Ghrita* and breast milk is indicated for the treatment of *Sushkakshipaka*. Probably, *Anjana* acts as subconjunctival injection, disposal of the drug is very minimal so the tissue contact time is more^[12]; absorption is maximum thus bio-availability is naturally more so helps to relieve symptoms of Dry eye.

Tarpana

Tarpana with *Jivanti ghrita* is mention in *samhitas* for treatment of *Shushkakshipaka*, it helps to restore quality

and quantity of tears because absorption of the drug in *Tarpana* procedure is more because the drugs used are lipid solution/ suspension. Penetration of fat soluble substance is high irrespective of molecular size. Tissue contact time of the drug is also more thus therapeutic concentration can be achieved.^[12]

Putapaka

Topical application of extracts prepared out of plant, animal flesh, and mineral by heating their mixture (paste) in a closed chamber. This extract is retained over the eye as in *Tarpana*. In extreme conditions of dry eye, *snehana putapaka* is indicated to relieve symptoms like foreign body sensation and pricking pain in eye. Efficacy of *putapaka* is more potent than *tarpana* because of its ingredients and method of preparation. It acts by restoring normal epitheliasation of ocular surface.

Ghritapana

Shushkakshipaka is a *Vata* predominant condition where *Ashru*- Tears are depleted due to lack of proper *Rasa Dhatu* formation; hence for normalization of *Rasa dhatu* systemic administration of Medicated *Ghrita* is essential. *Acharyas* has indicated *Ghritapana* as a first line of treatment for *Shushkakshipaka* along with other topical regimes.

CONCLUSION

Although *Ayurved* is holistic science takes care of human being with helps of nature. Medicaments and procedure of application described compensate vitiated *Doshas* and *Dhatu*s. So, it is irrelevant to exactly explain pharmacology of *Ayurvedic* medicines on bases of Modern science. But for globalization of *Ayurved* and increased numbers of life style disorders in world population it is mandatory to find a better solution for prevention and management of diseases occurred due to impact of contact lenses on eye. Management mentioned by author is adaptive to restore normalcy and strengths of ocular structure.

REFERENCES

1. Gilbard JP, Gray KL, Rossi SR. A proposed mechanism for increased tear-film osmolarity in contact lens wearers. *Am J Ophthalmology*, 1986; 102: 505-7.
2. De Paiva CS, Pflugfelder SC. Corneal epitheliopathy of dry eye induces hyperesthesia to mechanical air jet stimulation. *Am J Ophthalmol*, 2004; 137: 109-15.
3. Vagbhata, Ashtanga Hridaya - Sarvanga Sundari Comm. Arunadatta, Chaukhambha Krishna Das Academy, Varanasi, Uttarasthana, 2000; 15/16-17
4. Kuppens EV, de Jong CA, Stolwijk TR, et al. Effect of timolol with and without preservative on the basal tear turnover in glaucoma. *Br J Ophthalmol*, 1995; 79: 339-42.
5. Nuzzi R, Finazzo C, Cerruti A. Adverse effects of topical antiglaucomatous medications on the

- conjunctiva and lachrymal response. *Int Ophthalmol*, 1998; 22: 31–35.
6. Sushruta. *Sushruta Samhita Dalhana Comm. - Nibandhasangraha*, Chowkhambha Orientalia Varanasi, Uttaratantra, 2002; 9/20-24.
 7. Liu, Z.; Pflugfelder, S. "The effects of long-term contact lens wear on corneal thickness, curvature, and surface regularity". *Ophthalmology*, January 2000; 107(1): 105–111.
 8. Holden, B.A.; Sweeney, B.F.; Vannas, A.; Nilsson, K.T.; Efron, N. "Effects of long-term extended contact lens wear on the human cornea.". *Invest. Ophthalmol. Vis. Sci.*, November 1985; 26(11): 1489–1501.
 9. Miller, D. (October 1968). "Contact Lens-Induced Corneal Curvature and Thickness Changes". *Arch Ophthalmol*, 80(4): 430–432.
 10. Sweeney, D. "Corneal Exhaustion Syndrome with Long-Term Wear of Contact Lenses". *Optometry and Vision Science*, August 1992; 69(8): 601–608.
 11. Vrddha Vagbhata, *Ashtanga Samgraha - Sasilekha Comm. Indu*, Chaukhambha Krishna Das Academy, Varanasi, Uttarasthana, 2000; 20/2.
 12. Prof. K.S. Dhiman *Ophthalmic, ENT & Oro-dental Therapeutics in Ayurveda, Shalakyatantra Kriyakalpa Vijnana*, Chaukhambha Viswabharti, Varanasi, 2013.