

# Exploring Contact Lens Application for Keratoconus: A Comprehensive Review

**Arvind Trivedi**Research Scholar, Department of Optometry  
OPJS University, Churu, Rajasthan, India

**Abstract:** Keratoconus is a non-inflammatory corneal ectasia distinguished by apical protrusions and progressive corneal thinning. Optic issues may arise as a consequence of corneal ectasia, and the contact lens assumes a critical function in rectifying such complications. In order to enhance vision in patients with increased irregular astigmatism caused by corneal ectasia, specialised CL designs are necessary. As a result of recent developments in materials and design technology, contact lens treatment for keratoconus has progressed significantly, and an extensive selection of lenses is now available. This review will provide information on a vast selection of contact lenses, including soft and rigid lenses, hybrid lenses, scleral lenses, piggyback contact lenses (PBCL), and softtoric lenses.

**Keywords:** Management, Treatment

## REFERENCES

- [1.] Mandathara Sudharman P, Rathi V, Dumapati S. Rose K lenses for keratoconus-An Indian experience. Eye Contact Lens. 2010;36:220–2. [PubMed] [Google Scholar] [Ref list]
- [2.] Kok JH, van Mil C. Piggyback lenses in keratoconus. Cornea. 1993;12:60–4. [PubMed] [Google Scholar] [Ref list]
- [3.] Jain AK, Sukhija J. Rose-K contact lens for keratoconus. Indian J Ophthalmol. 2007;55:121–5. [PubMed] [Google Scholar] [Ref list]
- [4.] Ozbek Z, Cohen EJ. Use of intralimbal rigid gas-permeable lenses for pellucid marginal degeneration, keratoconus, and after penetrating keratoplasty. Eye Contact Lens. 2006;32:33–6. [PubMed] [Google Scholar] [Ref list]
- [5.] Nosch DS, Ong GL, Mavrikakis I, Morris J. The application of a computerisedvideokeratography (CVK) based contact lens fitting software programme on irregularly shaped corneal surfaces. Cont Lens Anterior Eye. 2007;30:239–48. [PubMed] [Google Scholar] [Ref list]
- [6.] Sorbara L, Dalton K. The use of video-keratoscopy in predicting contact lens parameters for keratoconic fitting. Cont Lens Anterior Eye. 2010;33:112–8. [PubMed] [Google Scholar] [Ref list]
- [7.] Edrington TB, Szczotka LB, Barr JT, Achternberg JF, Burger DS, Janoff AM, et al. Rigid contact lens fitting relationships in keratoconus. Collaborative Longitudinal Evaluation of Keratoconus (CLEK) Study Group. Optom Vis Sci. 1999;76:692–9. [PubMed] [Google Scholar] [Ref list]
- [8.] Buxton JN, Buxton DF, Dias AK, Scorsetti DH. The CLAO Guide to Basic Science and Clinical Practice. 3<sup>rd</sup> ed. Vol. 3. Iowa: Kendall/Hunt; 1995. Keratoconus Basic and Clinical Features; pp. 101–22. [Google Scholar] [Ref list]
- [9.] Perry HD, Buxton JN, Fine BS. Round and oval cones in keratoconus. Ophthalmology. 1980;87:905–9. [PubMed] [Google Scholar] [Ref list]
- [10.] Barr JT, Zadnik K, Wilson BS, Edrington TB, Everett DF, Fink BA, et al. Factors associated with corneal scarring in the Collaborative Longitudinal Evaluation of Keratoconus (CLEK) Study. Cornea. 2000;19:501–7. [PubMed] [Google Scholar] [Ref list]
- [11.] Jinabhai A, Radhakrishnan H, Tromans C, O'Donnell C. Visual performance and optical quality with soft lenses in keratoconus patients. Ophthalmic Physiol Opt. 2012;32:100–16. [PubMed] [Google Scholar] [Ref list]

- [12.] Barnett M, Mannis MJ. Contact lenses in the management of keratoconus. *Cornea*. 2011;30:1510–6. [PubMed] [Google Scholar] [Ref list]
- [13.] Gonzalez-Mejome JM, Jorge J, de Almeida JB, Parafita MA. Soft contact lenses for keratoconus: Case report. *Eye Contact Lens*. 2006;32:143–7. [PubMed] [Google Scholar] [Ref list]
- [14.] Zadnik K, Barr JT, Edrington TB, Everett DF, Jameson M, McMahon TT, Shin JA, Sterling JL, Wagner H, Gordon MO. Baseline findings in the Collaborative Longitudinal Evaluation of Keratoconus (CLEK) study. *Invest Ophthalmol Vis Sci*. 1998;39:2537–2546. [PubMed] [Google Scholar] [Ref list]
- [15.] Gomes JA, Tan D, Rapuano CJ, Belin MW, Ambrósio Jr R, Guell JL, Malecaze F, Nishida K, Sangwan VS; Group of Panelists for the Global Delphi Panel of Keratoconus and Ectatic Diseases. Global consensus on keratoconus and ectatic diseases. *Cornea*. 2015;34:359–369. [PubMed] [Google Scholar] [Ref list]
- [16.] Bilgin LK, Yilmaz S, Araz B, Yuksel SB, Sezen T. 30 years of contact lens prescribing for keratoconic patients in Turkey. *Cont Lens Anterior Eye*. 2009;32:16–21. [PubMed] [Google Scholar] [Ref list]
- [17.] Dorronsoro C, Barbero S, Llorente L, Marcos S. On-Eye Measurement of Optical Performance of Rigid Gas Permeable Contact Lenses Based on Ocular and Corneal Aberrometry. *Optom Vis Sci*. 2003;80:115–125. [PubMed] [Google Scholar] [Ref list]
- [18.] Negishi K, Kumanomido T, Utsumi Y, Tsubota K. Effect of Higher-Order Aberrations on Visual Function in Keratoconic Eyes with a Rigid Gas Permeable Contact Lens. *Am J Ophthalmol*. 2007;144:924–929. [PubMed] [Google Scholar] [Ref list]
- [19.] Polse KA, Decker MR, Sarver MD. Soft and hard contact lenses worn in combination. *Am J OptomPhysiol Opt*. 1977;54:660–665. [PubMed] [Google Scholar] [Ref list]
- [20.] Alemany Al, Mejome JMG, Almedia JB, Parafita MA, Refojo MF. Oxygen transmissibility of piggyback systems with conventional soft and silicone hydrogel contact lenses. *Cornea*. 2006;25:214–219. [PubMed] [Google Scholar] [Ref list]
- [21.] Sengor T, Kurna SA, Aki S, Ozkurt Y. High Dk piggyback contact lens system for contact lens-intolerant keratoconus patients. *ClinOphthalmol*. 2011;5:331–335. [PMC free article] [PubMed] [Google Scholar] [Ref list]
- [22.] O'Donnell C, Maldonado-Codina C. A hyper-Dk piggyback contact lens system for keratoconus. *Eye Contact Lens*. 2004;30:44–48. [PubMed] [Google Scholar] [Ref list]
- [23.] Smith KA, Carrell JD. High Dk piggyback contact lenses over intacs for keratoconus: a case report. *Eye Contact Lens*. 2008;34:238–241. [PubMed] [Google Scholar] [Ref list]
- [24.] Wietharn BE, Driebe WT. Fitting contact lenses for visual rehabilitation after penetrating keratoplasty. *Eye Contact Lens*. 2004;30:31–33. [PubMed] [Google Scholar] [Ref list]
- [25.] Andreanos KD, Hashemi K, Petrelli M, Droutsas K, Georgalas I, Kymionis GD. Keratoconus Treatment Algorithm. *Ophthalmol Ther*. 2017;6:245–262. [PMC free article] [PubMed] [Google Scholar] [Ref list]
- [26.] Nau AC. A comparison of SynergEyes versus traditional rigid gas permeable lens designs for patients with irregular corneas. *Eye Contact Lens*. 2008;34:198–200. [PubMed] [Google Scholar] [Ref list]
- [27.] Ozkurt Y, Oral Y, Karaman A, Ozgur O, Dogan OK. A retrospective case series: use of SoftPerm contact lenses in patients with keratoconus. *Eye Contact Lens*. 2007;33:103–105. [PubMed] [Google Scholar]
- [28.] Abdalla YF, Elsahn AF, Hammersmith KM, Cohen EJ. SynergEyes lenses for keratoconus. *Cornea*. 2010;29:5–8. [PubMed] [Google Scholar] [Ref list]
- [29.] Hashemi H, Shaygan N, Asgari S, Rezvan F, Asgari S. ClearKone-SynergEyes or rigid gas-permeable contact lens in keratoconic patients: a clinical decision. *Eye Contact Lens*. 2014;40:95–98. [PubMed] [Google Scholar] [Ref list]
- [30.] Fernandez-Velazquez FJ. Severe epithelial edema in Clear-KoneSynergEyes contact lens wear for keratoconus. *Eye Contact Lens*. 2011;37:381–385. [PubMed] [Google Scholar] [Ref list]
- [31.] Fernandez-Velazquez FJ. Severe epithelial edema in ClearKoneSynergEyes contact lens wear for keratoconus. *Eye Contact Lens*. 2011;37:381–5. [PubMed] [Google Scholar] [Ref list]