

# An Interesting Use of Bausch and Lomb's KeraSoft® IC Lens



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## **Introduction:**

The KeraSoft® IC lens, introduced to the United States by Bausch and Lomb, hit the US market in early January of this year. Although just recently brought to the United States, it has been utilized successfully in Europe for several years. KeraSoft® IC is a customizable soft lens design for the healthy management of keratoconus and most other irregular corneal conditions.<sup>1,2</sup> It is made exclusively in Contamac's Definitive® (Eprofilcon A) Silicone Hydrogel material, which has a water content of 74%, Dk of 60 and is replaced quarterly.<sup>1,2,3</sup>

One of the hallmark concepts of the KeraSoft® IC design is that the patient does not need to discontinue their current lens modality prior to being fit.<sup>1,2</sup> In the past, patients with suspected induced corneal warpage secondary to contact lenses were instructed to discontinue lens wear for a given period of time before being fit with new lenses in order to achieve the most appropriate fit.<sup>4,5</sup> In the case of patients with irregular corneas, best corrected visual acuity is often significantly better with contact lenses than with spectacles and discontinuing contact lens wear for any significant length of time is not always a realistic option.<sup>4</sup> The draping effect and the no-tear-lens principle utilized by the KeraSoft® IC design allows for the cornea to normalize and maintain acceptable vision while wearing the lens, resulting in the patient retaining vision and comfort throughout the entire corneal rehabilitation process.<sup>1,2</sup>

Most patients who are fit with the KeraSoft® IC lens have corneal irregularity associated with a disease condition or a surgical procedure.<sup>1,2</sup> If these patients are experiencing secondary corneal warpage from their previous contact lenses, once the secondary corneal warpage is normalized they will still have an irregular corneal profile and can benefit from the level of visual acuity and comfort provided by the KeraSoft® IC lens design. In the case of a patient who has normal corneas but has developed secondary corneal warpage from long term Gas Permeable (GP) contact lens wear, the KeraSoft® IC design can be a tremendous tool in the transition from one lens modality to another, as the patient's cornea is able to normalize without having to discontinue lens wear.<sup>2,4,5</sup> This was exactly the case for a patient seen here at the University Eye Center at the Michigan College of Optometry.

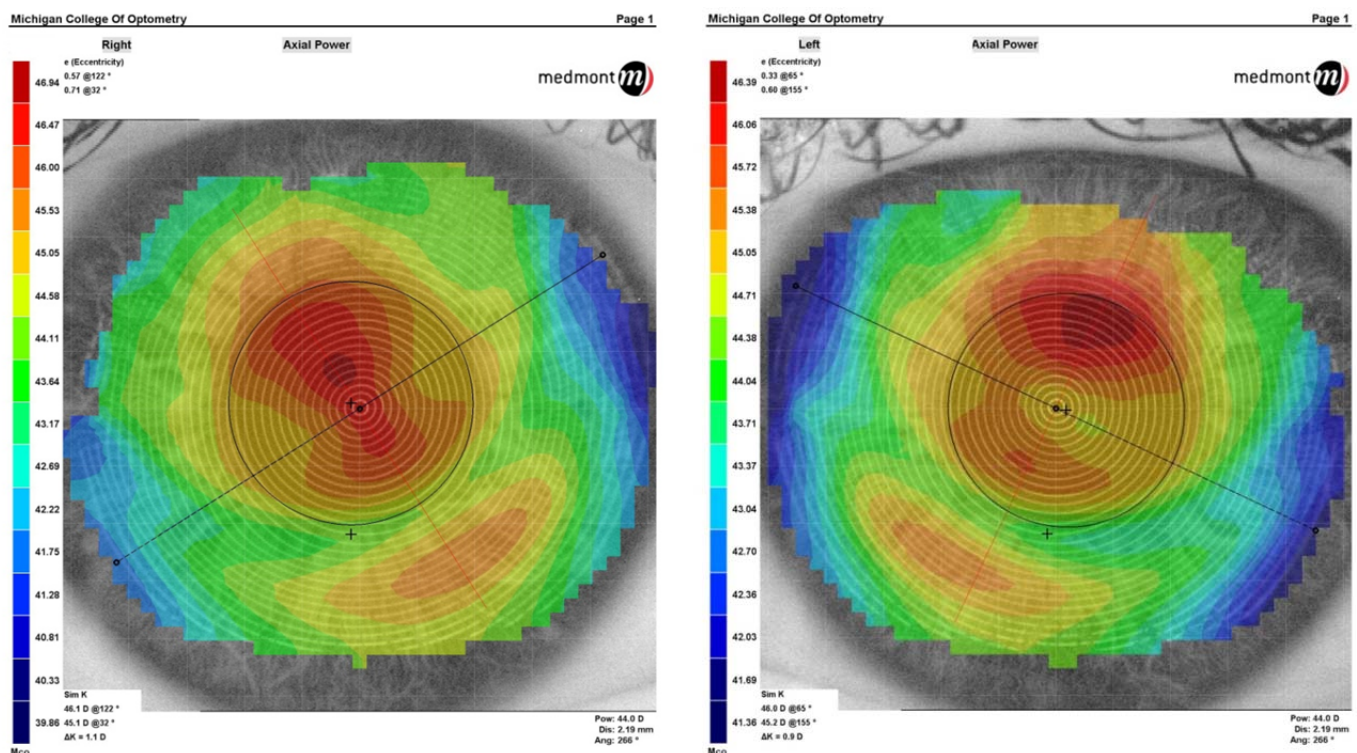
## **Case Report:**

A twenty-eight year old female patient presented to the University Eye Center at the Michigan College of Optometry with a chief complaint of significant glare with her GP lenses in and spectacle blur

post removal of her GP lenses. The patient reported the glare and spectacle blur occurring over the past five years with increasing severity in the past year. The patient is a high myope and has a twenty year history of GP lens wear. The patient reported the blur to be severe enough that spectacle wear outside the house was not an option due to feeling unsafe with her level of visual acuity. The patient has been instructed for multiple years to limit the length of GP lens wearing time, but has not been able to discontinue for any significant length of time due to her work and classroom schedule.

Her latest GP lenses had base curves of 7.45mm OU, 10.0mm diameters OU and powers of -12.00 sph OD and -13.25 sph OS. Her best corrected visual acuities through her lenses were consistent from her past exams at 20/25+1 OD and 20/25-1 OS with plano over-refractions OU. Both lenses were in good condition with acceptable fluorescein patterns and movement OU. However, both lenses rested superior-temporally on the cornea.

Upon removal of the GPs, subjective refraction yielded -14.50-1.00 x 045 OD with a visual acuity of 20/30-1 and -15.75-0.75x135 OS and 20/30-2 visual acuity. The patient reported clearer visual acuity through this refraction versus her most recent spectacle Rx. Corneal topography was performed OU due to the probability of corneal warpage secondary to her long history of GP lens wear. The patient's baseline topographies can be seen below.

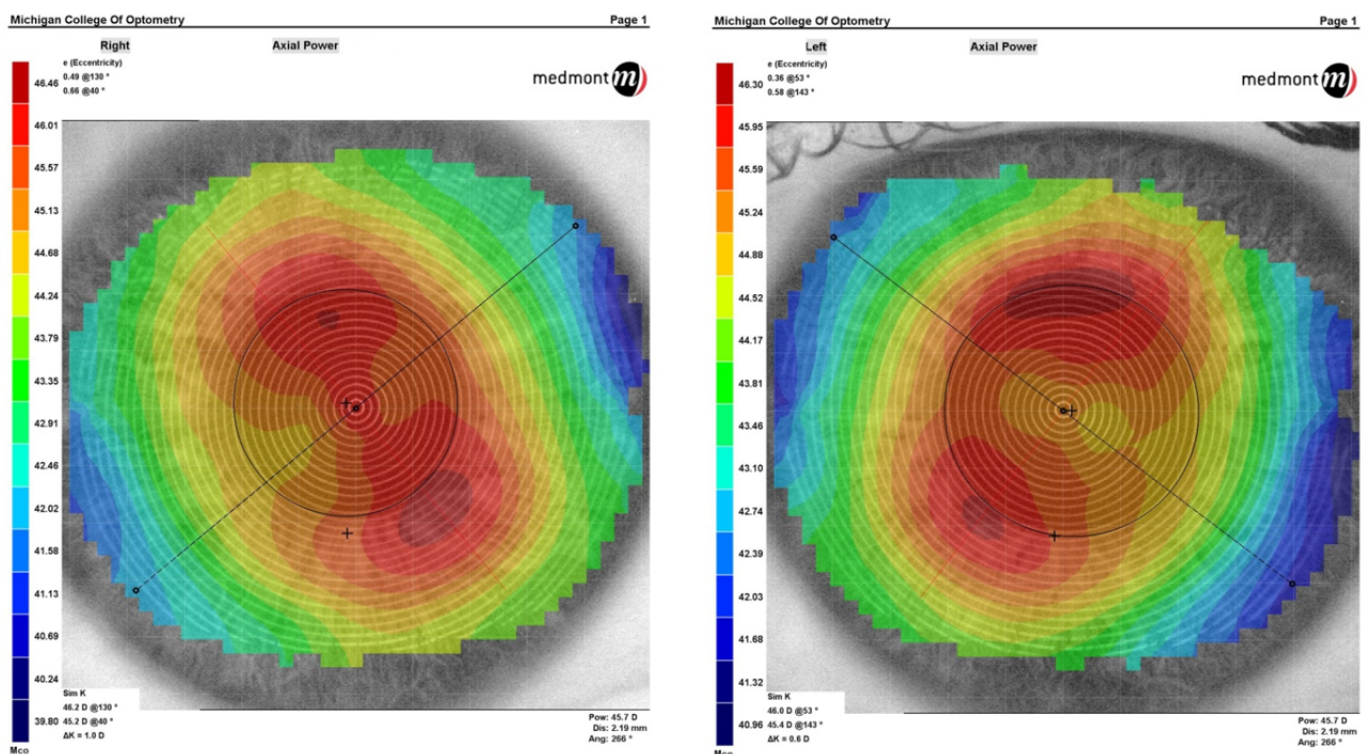


The topographies show the patient's limbus-to-limbus corneal astigmatism being disrupted inferior nasal OU. The flat profile along with the large diameter of the high-minus GP lenses allow for excessive lid attachment resulting in the lenses being held superiorly. The abbreviation in the corneal astigmatism results from the peripheral curves of the lens flattening the cornea while being held in a superior position. The area that appears to be steepening inferior nasal is not actually steepening, but is

the termination of the corneal astigmatism outside of where the edge of the lens sits. This warpage of the cornea further promotes the lenses to rest in the observed superior temporal position OU.

The patient was fit into Bausch and Lomb's KeraSoft® IC lens using the fitting set and the supplied corneal profile fitting guidelines. Best stable visual acuity was achieved with the 8.6 BC lens OU but the lens exhibited unstable movement and mild erratic rotation, thus a one-steep periphery was ordered OU. Lens powers ordered were -11.25 -0.25 x 050 OD yielding 20/20 and -12.00 -0.25 x 123 OS yielding 20/20-1. Upon dispensing the KeraSoft® IC lenses, the patient reported equal or better visual acuity than with her current GP lenses with improved comfort. She was sent home with the lenses and scheduled to follow up after one month of wear to evaluate the changes in the amount of corneal irregularity.

Upon returning after a month of wear, the patient reported mild reduced comfort and increased lens movement upon blink, but the lenses still maintained acceptable visual acuity. Slit lamp evaluation of the lenses revealed the lenses to be sitting slightly inferior with mild variable rotation OU. The lenses were removed and corneal topography was performed. The one month results can be seen below.



The one month topographies show a normalization of the corneal astigmatism OU. Both corneas display regular bowtie astigmatic patterns in comparison to the baseline topographies taken one month prior. Spectacle refraction was performed at this visit and revealed -14.25-1.25x055 OD yielding of 20/20-1 and -15.00-1.00x120 OS yielding 20/25+1. The patient reported seeing much clearer with this new Rx than her current spectacles. It was decided to order Art Optical's Intelliwave® Toric custom soft lenses instead of continuing with the KeraSoft® IC design due to the corneas displaying regular astigmatism on topography. Intelliwave® trials were ordered for the patient in the Definitive®

material with base curves of 8.2 OU, diameters of 14.5mm OU and powers -12.00-0.75x055 OD and -12.50-0.75x120 OS. The patient was instructed to continue wearing the KeraSoft® IC lenses till the Intelliwave® trials were received.

Upon dispensing, the Intelliwave® Toric lenses fit well OU. They displayed zero to minimal rotation and the patient was seeing 20/20-1 OD and 20/25 OS with plano to minimal over-refractions OU. The patient reported excellent comfort and vision through these lenses and was excited to try them in real world conditions. The lenses were dispensed and the patient was scheduled to come back for a progress check at one month.

After one month of wear the patient reported consistent non-fluctuating vision with the Intelliwave® Toric lenses. She reported better vision OD than OS but had noted the same with her GP lenses as well. Overall, the patient was very happy with the comfort and vision of the lenses and was excited to get a pair of spectacles that could be worn without spectacle blur upon removal of her contact lenses.

### **Discussion:**

The KeraSoft® IC design is intended to be used for any type of corneal irregularity.<sup>1,2</sup> Induced corneal warpage in this case definitely constituted corneal irregularity.<sup>4,5</sup> The corneal warpage had been occurring for several years resulting from the patient having a twenty year history of GP lens wear. A patient with this level of myopia is much more comfortable in contact lenses than spectacles therefore discontinuing CL wear for any length of time long enough to significantly decrease the corneal warpage was not a feasible option.<sup>4,5</sup> That being said, the fluorescein patterns with the patients GP lenses were appropriate and well aligned. However, the fit was based off the irregular cornea and not her regular non-contact lens induced corneal profile. The patient had tried other soft lens designs in the past with limited success as the lack of tear lens and corneal irregularity decreased her vision to an unacceptable level, hence the continued use of GP lenses.

As stated before, the KeraSoft® IC design can be fit on an irregular cornea without any wash-out period from previous lens wear. Any change in corneal irregularity that occurs while wearing the KeraSoft® IC lens will be masked by the draping effect of the lens and can be addressed while ordering the next lens if the change is dramatic and detracts from the fit and visual acuity.<sup>1,2,3</sup> In the case of our patient, her cornea normalized to a regular astigmatic pattern over the course of one month of lens wear and was able to be re-fit into a conventional custom soft-toric design. The KeraSoft® IC design being replaced quarterly should give adequate corneal rehabilitation time within the life span of one set of lenses and it can then be decided to continue with the KeraSoft® IC design or switch to different lens design per patient situation.

### **Conclusion:**

The flexibility of the KeraSoft® IC design adapting to changing corneal profile is a very beneficial tool for practitioners. If a patient's current lens modality is not serving them well but they cannot discontinue lens wear and still maintain functionality in their daily life, the KeraSoft® IC design can fill

that niche, and do so very well. The arena of specialty contact lenses is evolving very rapidly with advances in lens design and materials. It is a very exciting time to be a contact lens practitioner.

#### References:

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