Contact Lens SPECTRUM Article

# The Big Picture: Treating the Whole Keratoconus Patient

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## The Big Picture: Treating the Whole Keratoconus Patient

*By Jeffrey J. Eger, O.D., F.I.O.S.*
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**Looking at the big picture results in improved patient satisfaction and a better contact l experience.**

More than 50 years ago, Dr. Gene Reynolds noticed that some World War II fighters who initially exhibited unaided visual acuity became keratoconic after spending time in dark foxholes with bombs screaming over believed that the extreme emotional stress of fighting and fear of death caused keratoconus. I also subscril theory.

Almost all of my keratoconus patients are very high achievers with a high-stress lifestyle and Type-A perso They utilize their energy inefficiently. These patients also spend a lot of time on nearpoint tasks, frequently overaccommodating. According to Zimmerman, a direct connection exists between the longitudinal trabecu meshwork fibers and the ciliary body. Each person holds his stress in a different part of the body, and I beli keratoconics hold their stress in their ciliary muscle. Poor facility occurs due to fatigue and inflexibility in the focusing system.

In addition, every keratoconus patient I have treated has intraocular pressures between 7mmHg and 12mn (measured by Goldmann applanation tonometry). Their eyes appear to be soft because their mires pulse w heartbeat. I have also discovered that these patients are very high myopes because their eyes are so long that these factors are related to the problems in keratoconus.

Contact lens practitioners fitting keratoconic corneas need to treat the whole patient, which can be accomp discovering the underlying complicating factors of keratoconus, such as emotional stress, divorce, job diffic death in the family.

### Fitting the Whole Cornea

The rigid gas permeable (RGP) contact lens must be fit meticulously, but on the entire cornea, not just the Make sure you're looking at the healthiest part of the cornea as well as the unhealthy portion. Enhance wh ignore what's dying. In a keratoconic patient, the superior part of the cornea is the healthiest, while the infe cornea is invaginated. You will normally see a dimpled area on the bottom, and the upper apex protrudes o the superior cornea of a keratoconus patient. The patient is much more comfortable with this type of fit, and lenses can be worn upwards of 16 hours a day.

You may often see central staining on many keratoconus patients wearing RGP lenses fit with apical clear
Many practitioners believe such central staining results from oxygen deprivation. I disagree. Most RGP len
materials today are highly oxygen permeable. Incorrectly fit or apex fit lenses lag down when they fit at the
steep apex. Lenses begin to fit too low and tightly, sealing off the healthiest part of the cornea, the superior
Fresh tears cannot wash behind the lens, and waste products, such as lactic acid, dead cellular debris and
dioxide, are trapped. I believe these trapped waste products cause the central staining seen on many kera
patients. With an intermediate aligned fit, the lens must attach to the upper lid, and rock on a fulcrum point
eye blinks. This fit also brings in fresh tears as the patient blinks. Fresh tears re-oxygenate the cornea. Wh
lens positions up, a bubble of tears squeezes out below the inferior portion of the contact lens, excreting w
products. This helps create a good metabolic pump and homeostasis.

Try fitting flat and intermediate in alignment to the ninth ring of the keratoscope. You'll often see a good, co
fit if the lens centers properly, expels tears and is fit in the superior part of the cornea, ignoring the central a
Patients fit this way say they see better and their lenses feel better. Their corneas look better as well.

**Four Patient Management Techniques**

**1** Flex the accommodative system. I am a case in point stressing the need to work the accommodative sys
While in optometry school, I played a lot of sports, but then cut back due to the high reading demand. After
noticed I couldn't see the board as well in class.

My acuities were about 20/50 with a refractive error of -1.25D at the time. After an eye examination, I was t
needed eyeglasses that would require a stronger prescription over time. An alternative was vision therapy
such as taking frequent breaks while reading, focusing both near and far, rotation and saccadic exercises a
plus reading glasses.

I opted not to wear the reading glasses for my refractive error and tried the vision therapy exercises instead
knew that after I played sports on the weekends, my vision was fine during the early part of the week. After
optometry school, my acuities returned to 20/20 unaided. Today, I am hyperopic and 20/20 unaided at dista
learned that when the patient is stressed, the periphery closes down. Keratoconus patients are extremely a
with frequently closed peripheries and overaccommodation.

I recommend to my patients that they take breaks at least every hour or two while working and to look out t
window and focus on distance. This exercises the accommodative and motilities muscles. I also prescribe
reading glasses over contact lenses for presbyopic patients.

**2** Enhance nutrition. Putting high-quality fuel into our bodies helps them work at peak performance. Low-qu
such as sugar, alcohol, caffeine and fat, results in poor body performance. One patient who returned for fol
was sure his cornea had changed. Indeed it had. The cornea had flattened, and the lens had tightened. I a
what had happened in his life since our last visit. The patient had stopped drinking coffee following our nutr
discussion. He was previously a 14-cup a day coffee drinker.

He was reluctant to change because his caffeine intake worked for him, but 4 months later, he made the ch
felt and slept much better.

**3** Begin an exercise program. Exercise not only keeps the body fit, but also reduces stress and rejuvenates
mind, body and soul. Many keratoconus patients are so tense by the end of the day that they're not respira
correctly. I suggest they walk outdoors and look at the sky or the surrounding landscape, not the ground. I

myopic people walk like they're looking for pennies, which does not promote the good, proper breathing ne release stress.

If keratoconics don't exercise, the unrelieved stress must go somewhere, and I believe it sits in the ciliary n also believe the negative energy residing there fatigues the ciliary muscle and causes the cornea to chang

**4** Make relaxation a priority. Relaxing also relieves stress and helps the keratoconic patient's accommodati system. Meditation and yoga, with stretching of the neck and shoulders, are excellent relaxation technique

Praying is another option. Opening yourself to your faith provides an "out" look. Myopes, including keratoc have too deep an "in" look. Looking "out" helps you see more of the "big picture." Relaxing more frequently keratoconus patients build up a reserve or buffer against their stress. I find that their corneas don't exhibit a change and don't require as many frequent refits under high-stress circumstances as they did in the past.

Rather than fitting lens after lens on my keratoconus patients, I challenge them to empower themselves, ar with me as a team to treat their keratoconus. They need to help change their corneas from soft to stable. If choose not to do so, their corneas keep changing, their vision is below par, their lenses are uncomfortable are not happy with the outcome. Partnering with patients to look at "the big picture" leads to higher succes

**CASE 1: Patient K.A. (female, age 21, CPA)**

K.A. was diagnosed as needing a penetrating keratoplasty after 2 years of wearing three-point touch and a clearance-fitted RGPs. Nine months after refitting, her corneas had cleared remarkably, she noticed improv and unaided visual acuity and could comfortably wear her intermediate-aligned lenses for more than 15 ho She presently does not require penetrating keratoplasty, and wears +0.75D reading glasses over her conta for near accommodative relaxation and efficiency. The patient is currently wearing Contex OK-2 Airperm c lenses.

**Parameters OS OD**

Base curve: 7.6mm 7.7mm

Diameter: 8.3mm 8.7mm

Power: +3.25D +0.25D

**CASE 2: Patient A.P. (male, age 30, physics professor)**

This spectacle-wearing patient received a keratoconus diagnosis. After he was fit with flatter intermediately aspheric RGPs and received vision training, he now has 20/30 unaided visual acuity OD, and 20/20 aided unaided visual acuity OS. The patient wears his contact lenses all waking hours with 20/20 acuity OU.

During the initial fitting, this patient's lenses were regularly refit every 3 to 4 weeks due to extreme corneal caused by accommodative stress and a poor exercise and nutrition regimen. He originally opted not to em himself and partner with the practitioner in his treatment plan. After not accepting an ophthalmology referra penetrating keratoplasty, he changed his way of thinking, wore +0.75D reading glasses and initiated an ex nutrition plan. The patient is currently wearing Contex OK-4 Airperm Aspheric lenses.

**Parameters OS OD**

Base curve: 8.05mm 8.5mm

Diameter: 9.5mm 9.3mm

Power: -0.87D +0.50D

**CASE 3: Patient D.W. (male, age 40, cardiologist)**

This patient was wearing well-fit slightly aspheric rigid gas permeable contact lenses to treat keratoconus v first presented for care. He was refit with flatter reverse geometry lenses to achieve higher unaided (20/40) aided (20/20) visual acuities. The patient had good success when partnering with the practitioner in seeing picture, walking more upright and breathing normally. However, after 3 months of this success, he decided drinking coffee, later confiding he normally drank 14 cups per day. His corneas consequently flattened, anc required a refit into flatter contact lenses. The patient presently wears +1.00D reading glasses over his con lenses. He is now currently wearing a Contex Airperm Aspheric 18 lens.

**Parameters OS OD**

Base curve: 8.28mm 8.45mm

Diameter: 10.5mm 10.3mm

Power: -2.75D -1.25D

Dr. Eger is in private practice in Mesa, Ariz., and has been a fellow of the National Eye Research Fou International Orthokeratology Section since 1984.

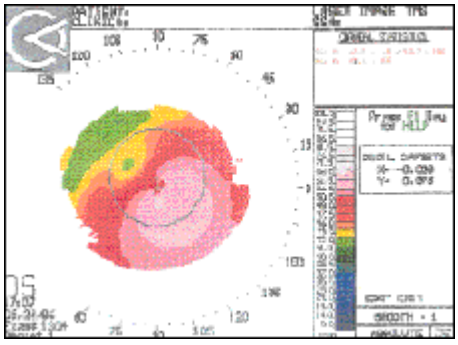

**FIG. 1: K.A.'s initial topography. She had been wearing lenses fit by another practitioner following the three-point tou apical clearance techniques.**

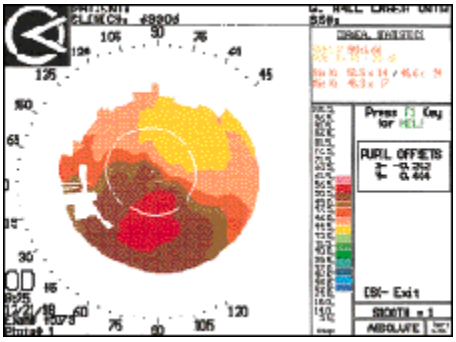

**FIG. 2: K.A.'s current topography following 1.5 years of partnering with her to look at the big picture and refitting**

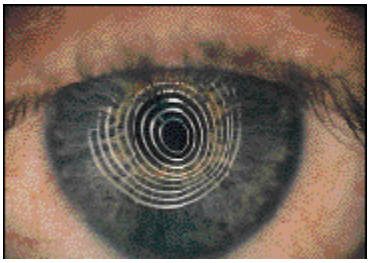

**FIG. 3: D.W.'s initial keratoscope findings.**

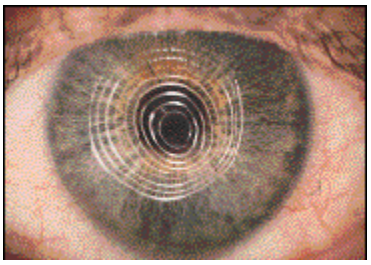

**FIG. 4: D.W.'s current keratoscope findings OS after 3 years of looking at the big picture.**

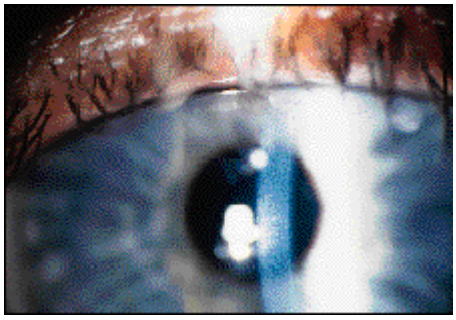

**FIG. 5: Keratoconus cornea after treatment showing only trace striae.**

THE EYESSENTIALS

- Fit the flat, healthy, superior cornea.
- Help the patient relax and see the big picture.
- Proper nutrition and exercise can help keratoconus patients stay focused.

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