
Corneal Rehabilitation Using Corneal Topography

Corneoscope photographs can help patients visualize
the condition of their eyes and help them
decide on their choice for therapy.

Have you ever been to the family doctor or dentist and been told you need some extensive treatment that is going to be expensive in both cost and time? You listened patiently as you heard the results of your examination, but like most patients, you wanted to see graphic evidence of your condition. When the doctor showed you the X-ray of the blocked vessel or the recession of your gums, he/she also showed you an example of a normal condition, which, of course, compared unfavorably to your own condition. He/she then informed you of the prognosis of your condition, the methods of therapy available, and what could happen if the condition was left untreated. Not only did the doctor impress you with his/her sincerity and thoroughness by showing and explaining the pictures of your condition, but also invited you to share in the management of your care by explaining all your options and their possible consequences.

Contact lens fitters can use the same technique for diagnosing and explaining corneal exhaustion and related conditions thanks to corneal photography. A corneoscope offers the practitioner the same credibility the family doctor or dentist attains with X-rays. The corneoscope measures approximately 2.5 times the area of the cornea than does the keratometer. Fitters limiting themselves to keratometry must rely on their verbal description, the distortion noted of the mires and the inability to achieve a crisp refraction in explaining their diagnosis. The corneoscope, on the other hand, allows the practitioners to point out in graphic terms the corneal warpage induced by an improperly fitted contact lens, as well as the benefits of the use of therapeutic lenses to reduce the distortion and make a good fit possible.

After showing patients their corneoscope photographs, I often have to explain that the cornea is not like a steel

ball, and that under certain stresses it can change over a period of time. For example, the cornea may invaginate or dimple in response to an irritant or foreign body as an act of self-defense.

At this point, the patient usually interrupts, "But doctor, I can still see fine through my contacts." Fitters should explain that it is difficult to arrive at a spectacle refraction because the front of the eye window is wrinkled or wavy, and spectacle lenses placed in front of the eyes will not sharpen a patient's vision because of the warpage. The keratometer distortion and the corneal staining evident with a biomicroscope can be explained, but a patient needs more graphic evidence to fully understand and be convinced that treatment is necessary. The coup de grace is to take a keratograph with the corneoscope. After the patient is shown the corneoscope photograph and what a normal cornea looks like, an immediate change in attitude is seen, especially with "shopper type" patients.

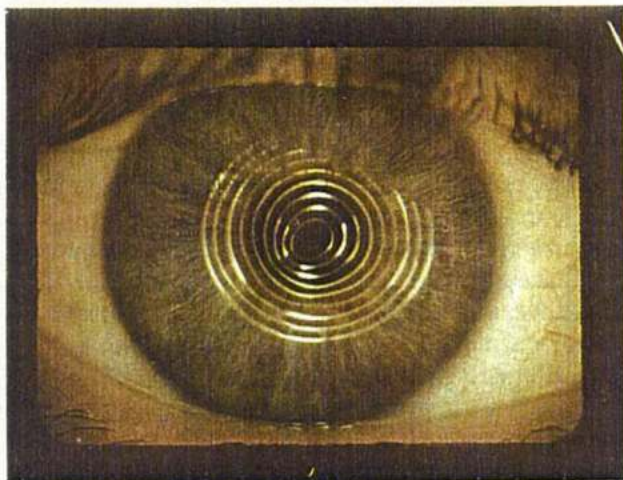
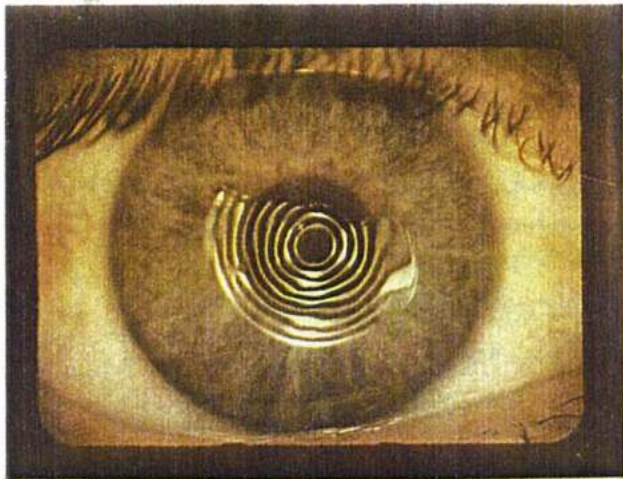
Give Patients Options

Once patients know a problem exists, they usually will ask what should be done. I have found that it is better not to give just one answer; I prefer to give them their options from best to worst.

The first mode of therapy I recommend is corneal rehabilitation, which involves using a series of different lenses. The first lens will be fitted in the periphery to the flattest ninth corneal ring. This ninth ring is usually much flatter in radius of curvature than the center three millimeters, which is equivalent to the K readings. The lens used is usually a highly oxygen permeable special aspheric design RGP that is custom fitted to the abnormally shaped cornea. The principle behind

this therapy is similar to unwrinkling a dent punched in a plastic milk

By Jeffrey J. Eger, O.D.



"Before" and "after" photos of a keratoconus patient dramatically reveal therapeutic results. Improvement in this case occurred after one month of treatment wearing a lens designed to fit to the flattest peripheral curve of keratograph (ninth ring).

carton or ping pong ball. If you press lightly on the periphery of the dent, the center pops out to a normal smooth surface.

Once you have obtained a smooth and clear corneal surface with the flatter and looser fitted therapeutic lens, you must change to a slightly different lens. Each lens creates a new corneal shape, and the lens must be constantly changed as the cornea changes. It is of the utmost importance that you inform the patient at the start of therapy that he or she will be spending a lot of time in your office as you work together through the stages (different lenses) of this complex problem.

The second alternative mode of therapy is to "air out" the cornea. This involves taking the contacts off altogether and continually changing glasses until the cornea stabilizes itself. Be sure to explain to the patient

that the first or second pair of spectacles may not provide vision as clear as he or she would like because of the difficulty in arriving at a spectacle refraction. It may take one to three months until the patient can go back to contacts.

The last alternative is for the patient to stay with their present lenses and do nothing to correct the condition. In this case, it is important to explain that the corneal problem has developed because the cornea "knows something is not right." Explain to the patient that the cornea is dimpling itself to get an exchange of tears beneath the contact so it can breathe and rid itself of waste products. The patient should be warned that the cornea will continue to swell if the present condition is left untreated and a corneal ulcer may develop as a result. If the corneal ulcer is not treated immediately, there could be permanent damage.

Patient Fees

If the patient elects to have corneal rehabilitation, explain that there will be a number of check-ups during a six-month period. The patient should be put on a retainer because of the numerous visits and contact lens changes that this kind of therapy entails. A normal rehabilitation case with the use of contacts made of RGP material costs \$800 to \$900; these fees include the contact lenses required over the six-month period. You must convince the patient that you work methodically and that he or she must have patience with the therapy. If you sense that this patient is impulsive, wants a quick fix, negotiates on the fee, or just plain won't give you control, then you can do very little for them and they should be dismissed.

If you are going to offer specialty care, such as corneal rehabilitation, you should arrange for payment in full before dispensing. Once you have been paid, you are more likely to have control of the case; patients will come for all their visits and contact lens adjustments.

My practice has been fortunate to handle 56 keratoconus cases and several refitted pseudo-keratoconus cases that resulted from tight contacts or radial keratotomy warpage. To date, of the 56 keratoconus patients, only one has had a corneal transplant. Referrals have come primarily from optometrists who work in the chains, private ophthalmologists and a few private practicing optometrists. In successful marketing of corneal rehabilitation, "seeing is believing," and "a picture is worth a thousand words." □

Jeffrey J. Eger, O.D., practices in Tempe and Mesa, Ariz., with a specialty in orthokeratology and vision therapy.

469 Keratoconus cases less than 1% transplants Nat. Avg 2.5% to date

Circle No. 8 on your reader service card