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Reliable results

Evolution in CK technique revolutionizes outcomes

New approach offers up to 3 D of hyperopic correction, surgeon says

By Cheryl Guttman
Reviewed by Henry L. Milne, MD

Dr. Milne

Washington, DC—Use of the neutral-pressure "Light Touch" technique for conductive keratoplasty (CK, Refractec) improves predictability, minimizes induced astigmatism, affords faster visual recovery, and provides the opportunity for higher corrections compared with the original approach.

Those benefits appear to be attainable without any loss of refractive stability or any other downsides, reported Henry L. Milne, MD, at the annual meeting of the American Society of Cataract and Refractive Surgery.

"The new Light Touch technique is quite easy to master and now, close to 1,000 surgeons worldwide have been retrained and are performing it with uniformly good results," said Dr. Milne, who is in private practice in Columbia, SC. "Based on its reliable accuracy, its patient 'wow factor,' and unparalleled safety, Light Touch CK has become by far my preferred treatment for any patient needing up to 3 D of hyperopic correction."

The Light Touch technique was developed after early postmarketing experience with CK demonstrated wide variability in outcomes were occurring in the hands of different surgeons with respect to refractive predictability and rates of induced cylinder.

"The magnitude and symmetry of corneal compression applied when delivering the radiofrequency pulse was the only variable with a proven relationship to predictability and induced-cylinder outcomes," Dr. Milne said. "Application of excessive pressure was found to be associated with a reduced tissue response to the energy, which translated into less refractive effect.

"If the excessive pressure was applied uniformly at all treatment spots, undercorrection occurred, while inconsistencies in pressure applied between spots resulted in induced cylinder," Dr. Milne explained.

Table 1 Five critical surgical skills for conductive keratoplasty

1. Centration and marking
2. Tip placement alignment
3. Steady hand
4. Amount and consistency of pressure
5. Consistent full probe depth throughout pulse

OT Graphic

Ophthalmology Times / Source: Henry L. Milne, MD

Fully seated probe

The goal in performing the Light Touch technique is to maintain full probe depth consistently throughout the pulse. At each treatment spot, the surgeon needs to take care first to seat the probe fully by pushing it in firmly until the cornea develops minimal dimpling of about several millimeters. The probe should be pulled back gently until the striae around the tip are minimized to a 1- to 2-mm dimple.

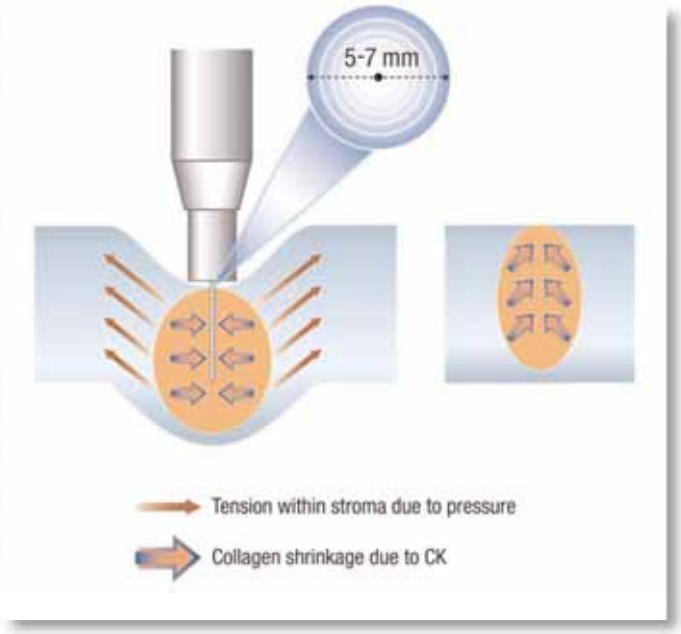
At that point, the foot pedal is depressed, but the surgeon needs to monitor the corneal response carefully during the 0.6-second delivery period to assure the full 450-µm length of the probe is seated within the cornea the entire time.

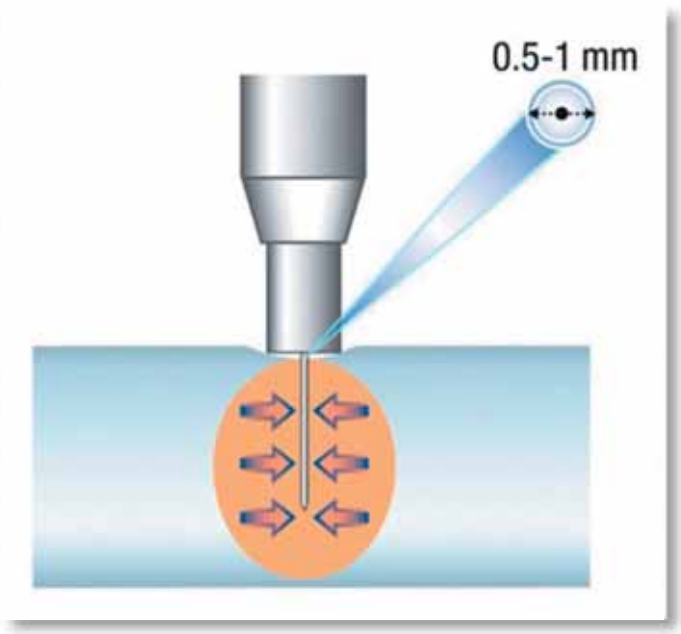
"About halfway through, the cornea will begin to contract away from the probe, and it is then necessary to gently follow the cornea down with the probe and maintain a steady hand position throughout to assure full and consistent energy delivery," Dr. Milne said.

> 'Within minutes after the . . . procedure, patients are able to read fine print on a business card.'
>
> Henry L. Milne, MD

Proof in the outcomes

Results from a study performed by Dr. Milne and Daniel S. Durrie, MD, director of refractive surgery, Durrie Vision, Overland Park, KS, highlight the safety and improved results of Light Touch CK. Their trial included 67 eyes of 67 subjects with a mean age of about 55 years who were undergoing spherical cor-





Figures 1 and 2 The CK conventional pressure technique causes tension within the stroma due to pressure and collagen shrinkage (top). With the NearVision CK (Refractec) with Light Touch technique, there is no tension within the stroma due to pressure (bottom).
(Figures courtesy of Henry L. Milne, MD)

rections of between 1 and 2.50 D. The results showed that the achieved corrections at 1 month post-treatment were within 0.2 to 0.3 D of intended and much more accurate than those occurring with conventional CK.

In addition, using the Light Touch technique it was possible to achieve a greater treatment effect using fewer spots and a larger optical zone, Dr. Milne said.

"With the original technique, I would need to perform an enhancement in up to one-third of my patients by 1 month. Now my enhancement rate has fallen to under 5%," he stated.

Near visual acuity outcomes with respect to proportions of eyes achieving ≤J1, ≤J2, and ≤J3 vision were numerically superior with the Light Touch procedure when compared with data for patients in the FDA Presbyopia clinical trial (PRS). Near vision recovery was also much faster with the Light Touch technique.

"Within minutes after the Light Touch procedure, patients are able to read fine print on a business card, whereas before we would keep our fingers crossed about recovery of near vision when patients returned after 1 week," Dr. Milne said.

Statistically significant differences favoring Light Touch CK were noted with respect to predictability and induced-cylinder outcomes. Corrections ±0.50 D of intended were achieved by 63% of eyes in the PRS study versus 85% of the 67 eyes treated with Light Touch CK. Cylinder was unchanged in 71% of eyes in the PRS study versus 90% in the Light Touch cohort; 17% of eyes in the PRS trial versus only 6% of eyes in the Light Touch study experienced up to 1.00 D of induced cylinder.

"All of the latter eyes as well as the 4% of eyes in our study that had more than 1.00 D of induced cylinder were still able to read J2 or better," Dr. Milne said.

Accumulating experience from a growing number of experienced CK surgeons indicates the stability of the treatment effect after Light Touch CK is no different from or even slightly better than that seen with the original technique. The same 0.25- to 0.50-D regression occurs during the first 6 months post-treatment, and early data indicate that thereafter there is an approximate 0.03-D loss of effect each month.

"That change in refraction is very consistent with what is observed when performing other treatments for hyperopia," Dr. Milne said. OT

Table 2 FDA study versus Light Touch procedure

	FDA PRS	CK Light Touch
≤J1	59%	63%
≤J2	82%	88%
≤J3	91%	97%
±0.50 D	63%	85%*
±1.00 D	90%	97%
IC		
No Change	71%	90%*
1.00 DC	17%	6% (J2, J1)*
>1.00 DC	12%	4% (J2, J1)

* Statistically significant

OT Graphic

Ophthalmology Times /
Source: Henry L. Milne, MD

Table 2 Near visual acuity outcomes were superior in the Light Touch CK group compared with FDA Presbyopia clinical trial (PRS) of CK. Statistically significant differences favoring Light Touch CK were noted with respect to predictability and induced cylinder outcomes.

FYI

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Dr. Milne has no financial interest in Refractec.