

Search

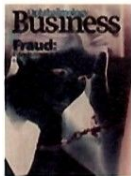
G;EIJ
Advanced Search

APACRS 2013



Click here for the
EyeWorld Show Daily

Ophthalmology
Business



View Latest Issue

Resources

Ophthalmologists

Practice Managers

Patient Education

eyeCONNECT
Community

IOL Calculator

operation of single plane and multi-plane incisions in the cornea, each of which may be performed either individually or consecutively during the same procedure.
CONTRAINDICATIONS Patients with corneal ring and/or inlay implants, severe corneal ectasia, corneal abnormalities, significant corneal edema.
2014-07-10 14:02:02

CATALYS
PRECISION LASER SYSTEM



Learn More

Abbott
Medical Optics

Share this article • Print Article

February 2013

REFRACTIVE SURGERY

**Refractive editor's corner of the world
CorT'ing accuracy**

by Enette Ngoei EyeWorld Contributing Writer



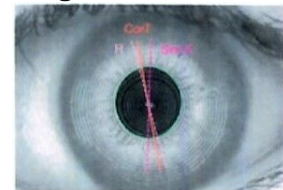
Treating corneal astigmatism isn't quite as simple as it seems. After all, manual keratometry continues to be the gold standard that many feel is still the most accurate means to measure corneal astigmatism. Imagine that. In 2013, we are in the tech age of electronic health records; we have digital apps to introduce our practices to the public, and social media to communicate with each other. Yet in these advanced, high-tech times, manual keratometry is still dominant.

A new parameter is said to be a more reliable method of quantifying corneal astigmatism than currently available measures. In the future, when ophthalmologists look at corneal astigmatism, instead of asking for the Sim K value, the standard measure for the last 25 years, they will ask, "What's the CorT value?" said Noel Alpins, F.R.A.N.Z.C.O., NewVision Clinics, Melbourne, Australia. The variability of Sim K values has been a point of frustration, Dr. Alpins said, so he and colleagues developed a new method of quantifying corneal topographic astigmatism, known as CorT. CorT is more accurate and reliable than the other commonly used measures such as Sim K, manual keratometry, corneal wavefront, and paraxial curvature matching, according to a recent study by Dr. Alpins and colleagues, published in the November 2012 issue of the Journal of Cataract & Refractive Surgery. To obtain a CorT value, rather than use one Placido ring for calculating corneal astigmatism as is the case with Sim K, the new method uses all the rings and takes an average across the whole cornea, Dr. Alpins said.

Clinical application

"We haven't used it in any of our treatment paradigms because we have to program it into the iASSORT program [Victoria, Australia] and get it functioning," he said. The iASSORT program is a software that sits on most available topographers and does a corneal astigmatism analysis, explained co-author of the CorT study George Stamatelatos, B.Sc.Optom., NewVision Clinics. The iASSORT software, developed by Dr. Alpins, is now interfaced with more than 10 topographers, and the first four that he anticipates will have the CorT parameter added are the Humphrey Atlas (Carl Zeiss Meditec,

The standard deviation of the ocular residual astigmatism (ORA) is significantly less for corneal topographic astigmatism (CorT) than other measures of corneal astigmatism.



The corneal topographic astigmatism (CorT) is closer in magnitude and orientation to the manifest refractive cylinder (R) than simulated keratometry. Source (all): Noel Alpins, M.D.

Auto-keratometers are convenient and quick and in some instances may be quite accurate. Placido disc and tomography imaging units have been around for some time and hold much promise to unlocking the secret of corneal measurements. Yet as each year passes, new upgrades come to improve the variability and flaws in last year's systems. Similarly, our variability in corneal astigmatism measurements continues to move many of us back to manual keratometry until the technology improves. I'm excited about this issue's "Refractive corner of the world." Dr. Alpíns and Mr. Stamatelatos have developed a new measurement, termed a CorT value, an alternative to a simulated keratometry (Sim K) value. Unlike the Sim K, the CorT value uses the measurements from the entire cornea and

Jena, Germany), Pentacam (Oculus, Wetzlar, Germany), the Sirius Corneal Topographer (CSO, Scandicci, Italy), and the Galilei (Ziemer Ophthalmic Systems, Port, Switzerland).

Once this is available to as many ophthalmologists as possible using their own treatments and analysis, Dr. Alpíns thinks the positive results will become more obvious.

"Currently, more than 99% of refractive laser treatments are performed entirely by refractive values, and perhaps there's been some resistance to moving to combining topography with it because of the variability of the Sim K value," Dr. Alpíns said. "I think we've solved that problem with the accuracy of the CorT parameter, and surgeons will feel comfortable now being able to combine topography and refractive values in their treatment plans."

Having the CorT parameter added to the iASSORT program will mean that not only can it do the analysis of the astigmatism pre- and post-op, it can also calculate the ocular residual astigmatism parameter pre-op based on the CorT parameter; on the first examination, the doctor can advise the patient on the suitability of getting rid of all the astigmatism using laser surgery, Mr. Stamatelatos said.

If patients come in for an assessment for laser surgery and their ocular residual astigmatism value is high with the CorT value, he said, "Then you might advise them that you're not going to treat all the astigmatism because you've got the most accurate parameter of the cornea, being the CorT, and then you've got the manifest refraction, which are not matching; you can't treat all the astigmatism with laser so you need to warn them that some of it is going to be left behind regardless of how well the surgery goes."

The CorT parameter can also apply when implanting toric IOLs, Dr. Alpíns said. While the Sim K or the manual K might give you one value, the CorT will give you the most effective magnitude of the corneal astigmatism and the orientation of the steep meridian, and this is important particularly when doctors are implanting toric IOLs, he explained. "We've had cases where there's been discussion on which is the steep meridian because when you measure with different devices, it'll be a different meridian, and that can significantly affect the outcome of a toric IOL."

The same applies when performing a limbal relaxing incision, Dr. Alpíns said. Whether with a diamond blade or with a femtosecond laser, the surgeon needs to know where to put the center of the treatment, so the CorT value and its meridian is going to be important to be able to line these up.

CorT is also an accurate and reliable way of measuring corneal irregularity, he said. "As part of the CorT, we have what we call the two semi-meridian CorTs. You can do a CorT calculation for each half of the cornea separately to get a magnitude value and a meridian value for each half of the cornea. Then you can do a calculation so that if you add those two together vectorially, you end up with the CorT for the whole cornea. If you vectorially subtract the two, you can then determine the dioptric difference of one half of the cornea from the other half. The term for this measure of irregularity is topographic disparity (TD)," Dr. Alpíns explained. He added, "When you look at all the topography devices currently available, each topographer currently has different ways of quantifying corneal irregularity. This topographic disparity (TD) parameter is like a common language, where all topographers can have one common measuring gauge for irregularity."

For corneal astigmatism itself, the CorT value, by representing the whole cornea not just one single Placido ring, provides some certainty in corneal measurements consistently closer to refractive cylinder, Dr. Alpíns said.

Editors' note: Dr. Alpíns and Mr. Stamatelatos have financial interests in the iASSORT software program used to support the planning and analysis of astigmatic correction.

takes an average across the whole cornea-a novel approach and one with much promise. Just as intriguing, this new algorithm can be incorporated into most of the topography devices that currently reside in our offices. Thanks to Or. Alpines and Mr. Stamatelatos for their contribution to this month's EyeWorld and for their work on helping to improve our astigmatism measurements.

Contact information

Alpins: +61.3.9584,6122, alpines@newvisionclinics.com.au
Stamatelatos: +61.3.9584,6122, george@newvisionclinics.com.au

Kerry Solomon, M.D., refractive editor

[Contribute](#) | [Editorial Board](#) | [Advertiser](#) | [Index](#) | [Publishing Statement](#) | [Advertise with Us](#)

ASCRS Copyright © 1997-2014 EyeWorld News Service
This site is optimized for 1024 X 768 Resolution