

# BENEFITS OF A PERSONALIZED PREOPERATIVE PLAN



The Optimeyes software provides surgeons with a patient-specific cataract surgery planning tool.

BY HERBERT REITSAMER, MD

Patients who present for cataract surgery today are typically not satisfied with their visual results when spectacle dependence remains an issue postoperatively. This is largely in part due to the increasing patient demands that coincide with the development of technologies that allow us to deliver precise, accurate, and reliable outcomes to our patients. But despite use of those technologies, which include advanced diagnostic devices, intraoperative aberrometry, and toric IOL alignment tools, refractive surprises can still occur postoperatively and patients can still end up needing glasses or, worse yet, experiencing visual side effects and poor, blurred vision.

Enter the Optimeyes software (Optimo Medical; Figure 1)—a device designed to enable eye surgeons to individually simulate and evaluate each cataract surgery patient preoperatively using biomechanical simulations. As a result, with the Optimeyes software, it is possible to more accurately predict an individual's outcome after cataract surgery, reducing or eliminating refractive surprises and other postoperative vision problems such as blurry vision. This is because surgeons now have the means to conduct a customized virtual simulation, based on an individual patient's corneal measurements, and to plan the procedure based on those calculations. This software has recently received the CE Mark, but I see great promise in its use.

## PERSONAL EXPERIENCE

I have been using Optimeyes in an investigational capacity for the past 9 months. In my experience with the technology, I have been impressed with the results, mainly because I am no



Figure 1. The Optimeyes software enables a patient-specific cataract surgery planning tool.

longer making decisions based on nomograms and past clinical experience but rather based on personalized calculations (Figure 2). Most specifically, Optimeyes has increased the level of confidence I have in managing astigmatism correction at the time of cataract surgery.

As the name of the software implies, it *optimizes* surgical results—it's not as if we can't achieve successful surgery without it, but the results are just better when we use it. Using the Optimeyes software helps us to keep on target postoperatively.

## HOW IT WORKS

I typically perform intrastromal keratotomy with a femtosecond laser for astigmatism management when toric IOLs are not indicated. After Scheimpflug topographies of the cornea are obtained, the measurements are sent via the Optimeyes software to the company's private cloud servers for evaluation. From there, the anonymous personalized calculations are determined to optimize incision creation and placement (Figure 3), and these parameters are entered into the laser

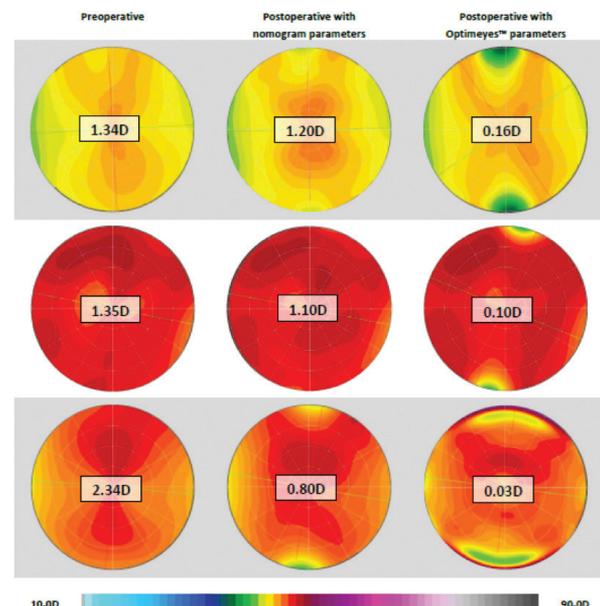


Figure 2. Optimeyes allows surgeons to make planning decisions based on personalized calculations rather than nomograms.

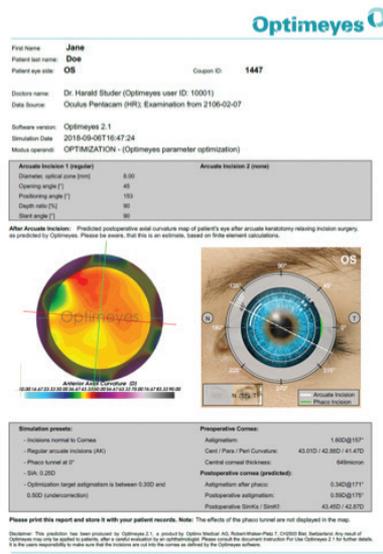


Figure 3. Anonymous personalized calculations are determined by the Optimeyes software to aid in precise incision creation and placement.

platform so that the intrastromal keratotomy can be precisely executed.

Optimeyes is easy to use, and it is very easy to interact with the company. Right now, the time differential between sending the measurements to Optimo Medical and receiving the personalized data is about 1 hour; however, in the future, this lapse will decrease.

## BIOMECHANICS AT WORK

How Optimeyes uses biomechanical simulations to calculate surgical parameters.

BY HARALD P. STUDER, PhD



The Optimeyes software (Optimo Medical) offers surgeons a unique opportunity to deliver truly personalized surgery to their patients.

This CE-Marked technology is based on biomechanical simulations and not on nomograms or statistical charts. In short, Optimeyes creates a digital twin of any patient's eye to remove the guesswork involved in astigmatism correction. Here's how it works.

After the surgeon performs topography measurements of the patient's cornea, he or she imports the data into the Optimeyes software and also details any relevant surgical parameters, for example, whether temporal or superior phaco tunnel incisions will be used. The case is anonymized and automatically submitted to our server

In my short experience, this very personalized approach to surgery has great benefits over planning astigmatism correction based on nomograms and clinical experience. Since the shape and properties of each cornea are unique, using personalized calculations to plan intrastromal keratotomy is the only way to get the ultimate result. Again, it is still acceptable to use nomograms, but with the individualized approach offered by Optimeyes, the postoperative results are more on target.

## FUTURE DIRECTIONS

We are currently participating in a study to determine the range of astigmatism that is best treated with this new approach to intrastromal keratotomy planning with Optimeyes. Thus far, the few patients who we have treated with intrastromal keratotomy based on the software's personalized calculations seem to have better results in terms of targeted astigmatism correction. We aim to include approximately 80 eyes in the study, and results should hopefully confirm

the usefulness of the Optimeyes software and uncover if there is any range of astigmatism where the technology works best.

I think that whenever we are given the opportunity to personalize cataract surgery—including astigmatism correction—we should take it. Patients will be happier, we will be happier, and ultimately we will see more success after surgery.

I also think that having software like Optimeyes available to use will help us to learn things about the cornea. And, maybe one day, we can add more parameters to these calculations, in order to further optimize the procedure and our patients' results. But for now, I think the availability of Optimeyes is a first step—and it's a very good step—in the direction of personalized, precise postoperative outcomes. ■

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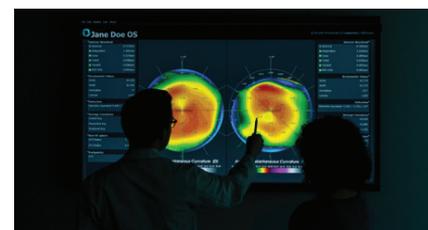


Figure. The Optimeyes software builds a copy of any patient's eye.

Sirius and the new OCT-based MS39 corneal topographer (CSO). The software is free to download, easy to use, and the surgeon only pays on a per-case basis. Please visit [www.optimo-medical.com](http://www.optimo-medical.com) and contact the company for more information. ■

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