

# A Few Good Ideas

Projects for the advancement of refractive surgery.

BY LEE T. NORDAN, MD



For me, research involving surgery has always followed the empirical method. I examine the results, adjust factors that may alter the outcome, re-examine the results, and keep changing factors until I achieve an improvement. Using the in-

ductive method of reasoning in matters involving surgical results can be very misleading (that is, create a theory and expect the results to match it). In my view, some topics for such a list might include (1) myopic epikeratophakia, (2) corneal ring segments, (3) the ideas that myopic PRK cannot improve mild, irregular corneal astigmatism or that PCIOLs are contraindicated in diabetic patients, and (4) intrastromal corneal laser surgery without a keratectomy.

Surgical results are reality and always correct. Refractive surgeons must be critical observers and remember to adjust their theories to fit the results and not the other way around.

This article suggests several projects that will provide important information to the clinical practice of refractive surgery. I hope they inspire some readers to take an active role in advancing the field.

## PROJECT No. 1

As an ardent supporter of a phakic ACIOL, I have seen the great value of the Visante OCT (Carl Zeiss Meditec, Inc., Dublin, CA). I would like, however, to urge the manufacturer to mount the ultrasonic head alongside the barrel of the operating microscope (double-barreled shotgun style) so that the surgeon can position the head with the X-Y pedal of the operating microscope and then obtain real-time ultrasound of the anterior segment. In this manner, the ophthalmologist could verify the position of all anterior chamber lenses at the time of surgery and make adjustments during the procedure. These data would be infinitely more valuable than the documentation of the improper location of a phakic ACIOL 1 to 2 days postoperatively with a reoperation still necessary.

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## PROJECT No. 2

Manual keratometry is the best method of demonstrating subtle irregular corneal astigmatism, but the image must be documented. Of real help would be a digital camera and printer hookup for recording the mires produced by the instrument. The keratoscopic rings of the raw topographic data are much too thick to demonstrate subtle findings.

## PROJECT No. 3

Forme fruste keratoconus and the minimal preoperative corneal thickness that is acceptable for LASIK are still important topics. An invaluable contribution to the field would be a study of several hundred LASIK eyes that have progressed to ectasia in which the investigators work backwards with data on pachymetry, K readings, and preoperative topography. Documenting subtle preoperative keratoconus is problematic, but such a study would indicate the preoperative factors associated with ectasia after LASIK.

## PROJECT No. 4

Refractive surgeons have unified the corneal ectasias clinically by assuming that both corneal pellucid marginal degeneration and keratoconus are part of the same disease process but manifest at different locations in the cornea. In my opinion, the cause of keratoconus is almost certainly a biochemical one, but the reason for the weak collagen of these eyes is unknown. The collagen itself appears normal, so biochemical research should focus on the connection between the collagen fibrils.

**PROJECT No. 5**

I would also like to propose a study of several thousands of eyes to determine the correlation between preoperative refractive error, pupillary size, and contrast visual acuity. The results could help patients greatly in choosing the method of refractive surgery that is best suited to their needs.

**PROJECT No. 6**

Also of benefit would be a study involving several thousands of eyes that revealed the correlation between pupillary size, various styles of bifocal IOL optics, and contrast visual acuity. The results could be used to improve the design and function of bifocal and multifocal IOLs.

**CONCLUSION**

These are my suggestions for improving the refractive surgery we provide to our patients. I am sure readers have several others, and I welcome their ideas. ■

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**WHAT DO YOU THINK?**

What do you consider to be the major issues facing refractive surgeons today? Is there a topic that you would like to broach for discussion? Share your suggestions or feedback with Lee T. Nordan, MD, at the e-mail address listed at the end of his article.