Current Status of Radial Keratotomy and Future Directions of Refractive Surgery

The American Academy of Ophthalmology held a special symposium on radial keratotomy in New Orleans in November 1986. This symposium was designed to present various points of view regarding the current status of radial keratotomy. The speakers selected for this symposium included both advocates of the procedure with years of experience as well as vocal critics of the procedure who, although not performing radial keratotomy, have observed serious complications of the procedure in the past few years.

The Editorial Board of the Journal of Refractive Surgery expresses its gratitude to the American Academy of Ophthalmology for allowing us to publish the text of this symposium in this issue (page 186). Each of the speakers has had an opportunity to review and correct the transcript of their remarks. Although the symposium was held almost 1 year ago, there have been no dramatic breakthroughs in radial keratotomy surgery in the past year; if a similar symposium were held again this year, I suspect that the remarks of the various participants would essentially be unchanged.

After 7 years of experience with radial keratotomy and refractive surgery, my opinion is that the future is bright. Even now, with careful patient selection and appropriate surgery, the results are very satisfactory for a high percentage of patients, and serious complications are rare. The most valid criticism of the procedure remains its accuracy for an individual patient. If you operate on 100 properly-selected patients, 85 to 90 most likely will be pleased. What about the other ten to fifteen, including some of the “over- and under-responders”? How can we do better?

Two exciting developments should help to improve the future accuracy of radial keratotomy: excimer laser and drug therapy designed to modify wound healing. Recently I returned from a Meditec Excimer Laser seminar held in West Germany. Professors M.U. Dardenne and Alf Tenner, and Dr. Thomas Neuhann are currently using the excimer laser to perform radial keratotomy incisions in animal eyes and in the blind eyes of volunteer subjects. Although many questions about wound healing, safety, efficacy, and control of incision depth must be answered, the technology is impressive and the potential for improved surgical accuracy seems obvious.

If we can achieve exquisite control of the mechanical aspects of the laser incisions, predictability should improve; but there will likely still be surprises caused by differences in wound healing among patients (over- and under-responders). Other researchers currently are studying the effectiveness of various wound healing drugs such as epidermal growth factor and other agents designed to modify the effects of radial keratotomy incisions during the healing phase. Perhaps the combination of precise excimer laser incisions and the judicious use of appropriate wound healing agents will allow surgeons to dramatically improve the predictability of radial keratotomy. Or perhaps the excimer laser reshaping of the corneal surface currently being evaluated by Drs. Kaufman and McDonald of Louisiana State University or the use of synthetic materials, either on or in the cornea, will provide the predictability we all seek.

It is certainly an exciting time for refractive surgery with many areas of exciting and potentially fruitful research currently underway.

Just as the future of refractive surgery looks bright, so does the future of our Journal. The International Society of Refractive Keratoplasty has recently appointed two exceptionally talented and dedicated associate editors for the Journal, Dr. Richard Lindstrom and Dr. George Waring. Both of them have already made major contributions to the emerging field of refractive surgery and I look forward to working together with them to insure the continued success of the Journal of Refractive Surgery in the years ahead.

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Editor