Chiron under the trade name NuVita (MA20). Initial empirical reports by Marinho with this phakic IOL at the European Society of Cataract and Refractive Surgery meeting in Prague confirm the correctness of the analyses undertaken by Baikoff, especially with regard to halos, glare, and stability of refraction. Loss of endothelial cells, which in the Baikoff ZB5M IOL was already significantly small, will probably be less. Whether ovalization of the pupil will occur with the new design requires longer observation.

Two articles by Zaldivar, Davidorf, and colleagues (Zaldivar R, Davidorf JM, Oscherow S. Posterior chamber phakic intraocular lens for myopia of -8 to -19 diopters. J Refract Surg 1998;14:264-305; Davidorf JM, Zaldivar R, Oscherow S. Posterior chamber phakic intraocular lens implantation for hyperopia of +4 to +11 diopters. J Refract Surg 1998;14:306-311) describe results obtained with a plate phakic posterior chamber lens by Staar, up to 3 years after implantation. The fundamentally new properties (hydrophilic, high refractive index, curved design) of the enhanced Fyodorov-style implant likewise show very good tolerance as well as good postoperative uncorrected visual acuity, both in myopic and also in hyperopic patients. It seems remarkable that this phakic posterior chamber lens is on all important points (stability of refraction, visual acuity outcome, postoperative follow-up) currently the most reliable way of correcting hyperopia. My own findings confirm this fully.

Four years after implantation of this new phakic posterior chamber lens, few lens-related cataracts and rare pupillary block glaucoma have been observed. Zaldivar et al describe surgically induced pigment dispersion, which is not progressive and becomes phagocytosed over time.

Trindade from Brazil reported his ultrasound biomicroscopic findings with the Staar plate phakic posterior chamber lens in six eyes at the European Society of Cataract and Refractive Surgery conference in Prague. In all eyes, he observed contact between the iris and the IOL and in some eyes, between the IOL and the crystalline lens in the mid-periphery. He did not report any IOL-induced cataracts, least of all in the observed areas of contact, or induced pigmentary glaucoma. He also found a reduction in anterior chamber depth and localized narrowing of the angle opening without any change having occurred in the intraocular pressure.

One finding in Zaldivar’s articles seems significant. Iridectomy is mandatory when implanting a plate posterior chamber IOL in phakic eyes if an IOL-related pupillary block is to be avoided. It also occurs, albeit rarely, with an angle fixated Baikoff IOL and is always a severe postoperative complication.

Zaldivar’s forthcoming article on the biotics procedure for extreme myopia of combined phakic IOL and LASIK (Zaldivar R, Davidorf J, Oscherow S. Combined posterior chamber phakic intraocular lens implantation and laser in situ keratomileusis: The biotics procedure for extreme myopia. J Refract Surg, in press) is a very new and important contribution to refractive surgery. As well as his gratifying results, his article describes how we still have a considerable way to go in refractive surgery. So long as the treatment of patients with extreme refractive errors exposes them to double the risk—the risk associated with both the cornea and IOL—the optimum techniques, which must be our goal, has not yet been attained. Both methods will therefore have to be developed further and merged into a single method. This will mean that the range of refractive surgery will become even greater and it is likely that we will have a solution for virtually every refractive problem in the next decade. In the future, the refractive surgeon will have to master both corneal and lens refractive surgery.

Seen from this vantage point, it seems more than logical that there should now be calls for very tight and definitive guidelines for publications on refractive issues. It is often very difficult and time consuming to read, understand, and compare these papers. Standards for special tables, illustrations, diagrams, and criteria must be specified as a matter of urgency so that the different publications and presentations of refractive methods and findings can be fundamentally better, and more rapidly understood and compared. Standardization is, in my opinion, urgently required, as has been emphasized by Waring (Waring GO. Standardized data collection and reporting for refractive surgery. Refract Corneal Surg 1992;2(suppl):1-45).

Are the Sirens Singing Again?

Charles Kelman, MD

Just as the ancient Greek Sirens enticed sailors to approach shallow, rock-strewn shores, and watched the ensuing destruction with glee, so too modern Sirens beckon eye surgeons into the treacherous
waters of the myopic eye.

These latter day Sirens first serenaded Spanish ophthalmologists in the 1950s, "Come. Sail into the anterior chamber with your rough hewn Plexiglas boards. It is so deep. So inviting. There is a beautiful, safe harbor here." Those brave surgeons heard the call and sailed forth. The Sirens laughed as the coarse, Plexiglas boats beat upon the endothelium and trabecular meshwork in the shallow passageways leading to the "safe" harbor of the scleral spur; the Sirens laughed louder when the boats were dragged from the resulting turbulent waters.

The Sirens sang sweetly again in the 1970s. "Come sail into the placid waters of the anterior chambers of aphakic eyes." And again they came—from England, from Russia, from America. Some used the same old boats. They polished them a little better, thinking that without rough edges, their boats could slip by undamaged, and undamaging. But once again, a gray cloud hung over the blood red turbulent waters, and the Sirens convulsed with laughter as the boats were dragged out.

Although a few eye surgeons carefully studied the submersed topography, diligently compared the measure of their ships against the size of the dangerous obstacles, and meticulously modified their ships so they could be flexible enough to nestle in the harbor without rubbing against the meshwork and endothelial shores, the outcry against the crashes of the poorly designed boats was so great, that ALL ships were deemed unsafe in the waters of the anterior chambers of aphakic eyes.

It is now the late 1990s, and the Sirens are singing again, "Come try the waters again. You may even venture deeper into the harbor, into the posterior chamber." Only now, we believe we know how to design safer craft. At least some of us know. And we sail again, hopefully more cautiously, and only a few boats at a time, as did the authors of papers published in this issue of the Journal of Refractive Surgery.

But there are some who will not learn from the lessons of the past, who have forgotten or who never learned the important essentials of design.

On the exhibit floor at the 1997 American Academy of Ophthalmology meeting, my heart sank when I saw an anterior lens for myopia, ready for sale outside the United States. It is a lens that violates many of the essential principles of lens design, which we have learned over the past four decades. Some of these are: 1) the haptics must not create intermittent touch in angle, 2) the haptics must not create touch, intermittent or constant, against the peripheral endothelium, and 3) the lens must not be in contact with any portion of the iris that moves during dilation or constriction, 4) the lens must be flexible enough to accommodate an internal diameter slightly smaller than the diameter of the lens, without undue pressure in the angle, 5) the lens must be placed in the largest diameter of the eye so it cannot rotate, and 6) the edges of the lens must be perfectly smooth, when examined under the electron microscope.

I believe there is a need for a phakic IOL for myopia, but it must be one that will be tolerated by the patient's eye for decades, for life. I am concerned not only that ill-conceived designs will create severe problems in eyes in which they are placed, but that they will, once again, so tarnish the reputation of all phakic IOLs that a fair evaluation of well designed lenses will then be impossible.

I implore any company intending to market a lens for myopia to do their homework. There have been many articles written about proper lens design for the anterior chamber. (Few for posterior chamber placement!) Ignoring the mistakes of the past will have serious consequences for the future of eyes harboring poorly designed lenses. Since the initial results, even with ill-designed lenses, are almost always good, patients will end up bilaterally implanted and ultimately bilaterally compromised. Damn those Sirens, anyway!

Will Some See the Future Through Phakic Intraocular Lenses?

Herbert E. Kaufman, MD

Photorefractive keratectomy (PRK) demands an excimer laser that costs about $500,000, and laser in situ keratomileusis (LASIK) adds to this expense the cost of a microkeratome. Although the exact complication rates for these procedures are debated, especially for LASIK—which depends to some extent on the experience and the background of the surgeon, significant complications are associated with both procedures when they are used for the correction of high myopia and hyperopia. Altering the parabolic shape of the cornea alters the quality of vision in ways that are difficult to quantify. Certainly, both LASIK and PRK result in abnormal corneal curvatures that differ from natural curvatures, and a number of theoretical papers have been written on the undesirable optical aberrations.