In this age of evidence-based medicine, patients and the profession deserve sound insight into the relative effects of various interventions. We therefore recommend that any study about the implantation of telescopic devices contain the following:

- As a minimum, estimates of the relative contributions of the 3 interventions.
- Preferably, a comparison of matched groups: surgery versus structured vision rehabilitation.
- The gold standard would be a true randomized clinical trial.

When such comparative studies are done, the benefits of intraocular telescopic devices can be properly separated from the improvements that can be achieved with vision rehabilitation training alone. However, unless journals and others insist that these comparisons be made, we will never have definitive proof of their relative strengths.

We urge you and other journal editors to apply these suggestions as review criteria for any paper that is sent for your review.

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Author reply

Dear Sir:
We were very impressed by the interest generated in such an important group of vision rehabilitation experts by our paper on the Intra Ocular Lenses for Visually Impaired People (IOL-Vip) system. Actually, the points raised in the letter were taken in due consideration in the article. First, the 1.3× magnification telescope comfortably improves the optical image with a small reduction of the field of view. Second, improving the use of the eccentric preferred retinal locus was the aim of our dedicated training programs. It works also in nonimplanted patients, of course, but definitely better in the implanted ones. Moreover, three quarters of our implanted eyes had relatively clear lenses and the effect of phacoemulsification surgery alone could be ruled out. Third, this has been for years an object of commitment in our rehabilitation service. Patients are treated as our family members.

We completely agree that suitable randomized clinical trials are needed to validate the IOL-Vip system, and it was the aim of our publication to create awareness and interest of the ophthalmologists involved in vision rehabilitation. Their cooperation and support will be needed in the difficult task of introducing this new and potentially useful procedure into clinical practice.

Nicola Orzalesi, MD
Chiara O. Pierrottet, MD
Milan, Italy

Depth of Focus

Dear Editor:
We congratulate Rocha et al on their work evaluating depth of focus with spherical and aspheric intraocular lenses.[1] The impact of the reduction or elimination of spherical aberration on depth of focus has been addressed by other researchers but remains unsettled.[2,3]

The primary outcomes of the study by Rocha et al are the differences in near and intermediate vision displayed in their Table 4. However, these differences are in reality rather small. To give an idea of the magnitude of these differences, translated to the Snellen and Jaeger scales with which most clinicians are more familiar, distance-corrected near visual acuities (DCNVA) are 20/63 (J8) for the IQ, 20/50 (J6) for the SN60AT, and 20/60 (J7) for the AR40. The results are therefore only 1 line apart in either direction. Distance-corrected intermediate visual acuities are 20/40 for the SN60AT and 20/50 for both the IQ and the AR40. Thus, the mean values are relatively close; the significant *P* values occur because the standard deviations (SDs) are relatively small. We question the clinical significance of J7 versus J8 near vision—neither is adequate, for example, to read *Ophthalmology*.

We raise 2 other key concerns regarding the conclusions of this study. First, the authors imply a correlation between decreased spherical aberration and decreased depth of focus; however, they do not specifically examine the data for this correlation. The missing analysis is the Pearson correlation coefficient between total Z [4,0] and logarithm of the minimum angle of resolution DCNVA (and distance-corrected intermediate visual acuity). This test could be performed for the entire study population and for each IOL subgroup. However, this analysis should be performed for equal pupil sizes only. It is scientifically incorrect to compare Z [4,0] values for different pupil sizes, as this coefficient increases proportional to r^4 where r is the pupil radius. The results could also be displayed graphically, with, for example, total postoperative spherical aberration for a given pupil size on the x-axis and DCNVA on the y-axis. Furthermore, the statistical significance of the correlation could be measured. Without this correlation analysis, the reader is left to infer the relationship of DCNVA and spherical aberration for each IOL from the data that are shown.

In essence, this study provides us with 2 pieces of information, that the IQ lens delivers less spherical aberration and that the IQ lens delivers less distance-corrected near vision (and vice versa for the SN60AT and AR40). We are not shown whether the eyes that had the least residual spherical aberration also had the least near vision, or whether the eyes that had the most residual spherical aberration had the most near vision. To support the conclusion that "residual spherical aberration can improve depth of focus," the authors should explicitly demonstrate the correlation between the two. Given the normal variation of corneal spherical aberration in the population, we would expect a normal distribution of postoperative total ocular spherical aberration for each IOL.[4] If the authors are correct, this distribution should show a statistically significant correlation with distance-corrected near and intermediate vision.

Second, the pupil size represents a critically important confounding factor. Their article's Table 3 shows that there are no statistically significant differences in pupil size. However, because depth of field is inversely proportional to pupil diameter, it is hard to ignore the trend that the group with the best near vision also happened to have the smallest photopic pupil (SN60) and that the group with the worst near vision also had the largest photopic pupil (IQ). The fact that these differences are not statistically significant has to do with the rather large SDs. In addition, as mentioned in the previous section, aberrations increase exponentially with pupil size; this is true not only for spherical aberration but also for all higher-order aberrations. Even small changes in pupil size cause very significant changes in the overall retinal image quality. Because of these factors, it would be instructive to show whether or not the data demonstrate a correlation between pupil size and distance-corrected near vision. If there is no correlation, then that fact will help support the authors' implicit argument that pupil size is not a factor in the outcome.

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Author reply

Dear Editor:

The authors thank Drs Packer and Fine for their cogent comments related to our study. The final spherical aberration target is a hot topic nowadays, especially when dealing with cataract and refractive surgery. Our two colleagues have pointed out the work by Marcos et al,[1] demonstrating that aspheric intraocular lenses (IOLs) showed a decreased tolerance to defocus. However, Piers et al[2] reported that the best contrast sensitivity performance peaked when spherical aberration was completed corrected.

Our study is based on the hypothesis that spherical aberration may improve depth of focus (or improve out-of-focus image quality), as suggested by previous publications. We measured image resolution (visual acuity [VA]) in 2 out-of-focus situations in pseudophakic eyes with different amounts of spherical aberration (0.03$\pm$0.05 μm, AcrySof IQ; 0.24$\pm$0.04 μm, AcrySof SN60AT; 0.14$\pm$0.07 μm, Sensar AR40). It was obtained by fixing the focus of each eye to infinity (distance corrected) and measuring VA at 0.33 and 1 m. We named this variable distance-corrected near VA. As a matter of fact, Artola et al presented a similar approach to evaluate presbyopia and positive spherical aberration after photorefractive keratectomy.[3]

We agree with the central point that other important variables such as pupil diameter, corneal multifocality, astigmatism, IOL dislocation in the capsular bag, high-order aberrations, and particularly spherical aberration may produce an increased depth of focus. Sawusch and Guyton have stated that astigmatism may be important to consider,[4] whereas spherical aberration has been considered an advantage by other authors.[5] All other authors did not state that these variables could be advantageous; they stated only that depth of focus may be explained by them. We listed these variables to clarify to the reader that other optical variables could influence depth of focus.

In the prospective randomized study, we implanted different IOLs (aspheric vs. spherical) in the two eyes of each patient to control for the effect of the pupil diameter and various refractive corneal abnormalities. In doing so, we did not find any statistically significant difference in either pupil