Nonwavefront-guided Presby Reversal Treatment Targeting a Monofocal Cornea After Bi-aspHERic Ablation Profile in a Patient Intolerant to Multifocality

To the Editor:

As we have previously stated,1 one of the major concerns of laser-induced corneal multifocality is the reversibility of the procedure. For this reason, we read with great interest the study by Luger et al.2 about a nonwavefront-guided Presby reversal treatment targeting a monofocal cornea using a bi-aspHERic ablation profile treatment. Interestingly, this Presby reversal mode attempts to correct residual refraction and remove all or some of the corneal multifocality induced by a previous PresbyMAX (SCHWIND eye-tech-solutions, Kleinostheim, Germany) treatment.

When a PresbyMAX treatment is targeted, several facts that we believe are noteworthy should be taken into account. First, nearly 20% of patients require an enhancement.3 Second, one of the reasons for patient dissatisfaction after multifocal ablation is the loss of lines of corrected distance visual acuity, probably due to the high levels of spherical aberrations induced. For these reasons, the authors should be commended for the development of a new laser ablation profile that has the potential to reverse the multifocality previously induced, targeting a monofocal cornea in cases of patient dissatisfaction. However, further studies with a large number of cases are needed to ensure the visual outcomes of this Presby-reversal profile. Until these studies are available, LASIK-induced monovision should be considered a valid option to correct presbyopia that has the important advantage of being an easily reversible procedure. In fact, and in contrast with the multifocal procedures, it is easy for a patient with LASIK-induced monovision to improve the distance or near vision for certain tasks by wearing glasses4 (ie, the quality of the “corrected vision with spectacles” should be almost perfect because the corneas are monofocal in both eyes).

For these reasons, we believe that further investigation is needed to improve our knowledge about the real advantages and disadvantages of the various procedures currently available for the treatment of presbyopia, including their reversibility.

REFERENCES


Montserrat Garcia-Gonzalez, MD
Miguel A. Teus, MD, PhD
Madrid, Spain

Reply:

We would like to thank Drs. Garcia-Gonzalez and Teus for their letter regarding our study.1 They refer to their article on monovision2 to compare monovision to PresbyMAX (SCHWIND eye-tech-solutions, Kleinostheim, Germany). However, their study design was “prospective observational,” not interventional (ie, we do not know which type of patients previously treated with monovision were included in the prospective analysis of 37 patients). Distance eyes had a postoperative refraction of +0.08 ± 0.6 diopters (D) (no range was provided, but assuming a normal distribution the 95% range would be -1.00 to +1.25 D), whereas near eyes resulted in -0.97 ± 0.46 D from -0.25 to -1.50 D. From those results, it is difficult to understand the absence of re-treatments in their cohort because some patients had either no monovision or unintended crossed monovision, and some patients ended up with 1 D of defocus in their distance eye.

We agree that monovision can be considered a valid option for patients with presbyopia. However, recent history has shown strong progress in many alternative technologies: multifocal contact lenses, multifocal intraocular lenses, conductive keratoplasty, corneal inlays (KAMRA [AcuFocus, Irvine, CA], Raindrop [RevisionOptics, Lake Forest, CA], etc.), multifocal ablation profiles (pseudo-accommodative cornea [Nidek, Gamagori, Japan], PresbyMAX [SCHWIND eye-tech-solutions], Supracor [Technolas PerfectVision, St. Louis, MO], Presbyond [Carl Zeiss Meditec, Jena, Germany], etc.), and Intracor (Technolas PerfectVision). Because of the coexistence of so many different techniques (including monovision) for approaching the same presbyopic problem, it can be inferred that a satisfying presbyopic correction has yet to be found. Similarly, at this moment, superiority cannot be claimed for any of the techniques.
Monovision is not free from re-treatments and reversals.\textsuperscript{3-5} It is true a re-treatment rate of 10\% to 20\% has been observed for PresbyMAX, including an approximate rate of 1\% for reversal treatments. For monovision,\textsuperscript{3-5} from approximately 65\% qualifying candidates, approximately 17\% (13\%\textsuperscript{3} to 28\%\textsuperscript{5}) are retreated, and approximately 5\% (2\%\textsuperscript{3} to 7\%\textsuperscript{5}) require a reversal treatment (retargeting the near eye to emmetropia).

So, it seems that PresbyMAX and monovision are equivalent regarding re-treatments. Furthermore, the re-treatment rate in the best monovision series cannot be better than in regular refractive surgery (which sets the potential lowest level of re-treatment after multifocal or monovision ablations).

However, we also acknowledge that a converging trend toward hybrid techniques is observed across the corneal presbyopic correction spectrum, in an attempt to overcome the monovision limitations while reducing the existing multifocal trade-offs of other techniques. These hybrid modifications include: conductive keratoplasty (full correction in the distance eye combined with conductive keratoplasty multifocality and monovision in the near eye), Supracor and PresbyMAX (reduced multifocality in the distance eye combined with full multifocality and monovision in the near eye), Intracor (full correction in the distance eye combined with Intracor multifocality and monovision in the near eye), KAMRA (full correction in the distance eye combined with pinhole based extended depth-of-focus and monovision in the near eye), as well as laser blended vision (moderate multifocality in both eyes combined with monovision in the near eye).

Finally, multifocal ablations are available, and our case report only served as a basis to demonstrate that non-wavefront–guided Presby reversal treatments targeting a monofocal cornea after bi-aspheric ablation profiles are clinically possible at the cost of a few microns of tissue (in our case report, 6 \(\mu\)m centrally and 11 \(\mu\)m peripherally). Having a less than 1\% reversal rate makes it extremely difficult to find a homogeneous series cohort to draw more essential conclusions than individual single case reports.

We agree that further investigation is needed to improve our knowledge about the real advantages and disadvantages of the different procedures currently available for the treatment of presbyopia, including their reversibility.

**REFERENCES**


Michiel H. A. Luger, MHA, MD
Tobias Ewering, Dipl-Ing (FH)
Samuel Arba-Mosquera, PhD
Utrecht, The Netherlands

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