



An update on corneal and lens-based refractive surgery options

The demand for spectacle independence at all ages continues to grow, as our population ages and life expectancy continues to rise. Younger and older individuals alike expect greater freedom to pursue their active lifestyles. However, as demands for higher levels of visual function increase, ophthalmologists have more technological options for refractive corrections than ever before, making it more important for surgeons to employ the most up to date methods and technology to fulfill patients' ever rising expectations of precise visual outcomes.

Corneal based corrections include surface ablation, LASIK, SMILE, and corneal crosslinking, while lens-based treatments include the implantable collamer lens, and premium intraocular lenses (IOLs). In this issue, Kondyli and associates provides a comprehensive overview on the newer types of IOLs including bifocal, trifocal and extended depth of focus IOLs, and the different characteristics of each lens which can lead to different visual outcomes in terms of distance, intermediate and near vision, contrast sensitivity and reading performance.

We find ourselves in an interesting technological time where sophisticated technologies exist but we are still learning how to employ them optimally. For example, applications for the femtosecond laser continue to expand annually. In this issue, Park and associates, explore the role of femtosecond laser in cataract surgery and how to implement it optimally in resident training for both benefits of the patient and surgeon, to improve patient visual outcomes but also give early exposure to this technology for trainees for potential use in their future careers.

Furthermore, this issue serves as an update on several refractive surgery topics such as refractive surgery options after cataract surgery and collagen crosslinking for pediatric refractive corrections. In this issue, Jin and associates, systematically review both the intraocular surgical methods and corneal refractive procedures for postoperative refractive correction after cataract surgery, which is vital for better visual outcomes and to meet increased expectations of spectacle independence after surgery. There are also updates in corneal surgery techniques, such as innovations in big bubble formation in deep anterior lamellar keratoplasty, riboflavin-UVA collagen cross-linking for the treatment of acanthamoeba keratitis, and an interesting study evaluating the association between donor corneal endothelial cell counts and infectious agent reactivity.

The future of IOL calculations has also become a topic of significant interest recently as artificial intelligence has been incorporated in promising ways. In this issue, Siddiqui and associates, present a review article on the Ladas super formula. The super formula is a dynamic, amalgamation of existing IOL formulas that uses 3-dimensional representations to determine areas of similarity and thereby optimizes lens calculations. It is apparent that with continued deployment of advanced mathematical techniques, artificial intelligence, precise biometric instruments, and other new technologies, outcomes following cataract and refractive surgery can become more accurate, resulting in the improvement in the quality of life of our patients.

In conclusion, this special issue gives a comprehensive update on corneal and lens based refractive surgery options. We hope that this special issue, with invited expert authors from across the world, will help ophthalmologists in the application of exciting technological advances to aid in significant improvements in patient refractive outcomes.

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Footnote

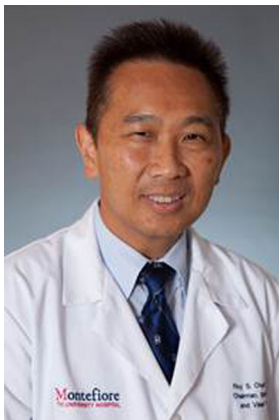
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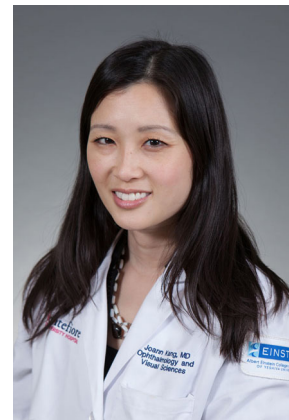
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