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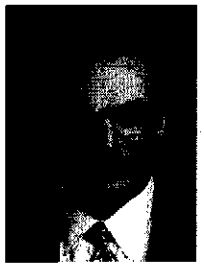
Preface

# Accomodation and Presbyopic Correction



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*Guest Editors*

Technology is the driving force within society and is the single most important factor affecting all human endeavors. If we think about what is happening with expanding technology in communications, we realize that within minutes of the World Trade Center attacks, televisions all over the world were informing local populations of the incident. We have cellular phones and an ability to communicate with anyone anywhere from any place. We have access to information through the internet to products that we never dreamed were accessible. There is increased efficiency in business. There is merchandising control in industry, and the distribution and sale of goods is enormously facilitated with far less redundant warehousing of products. Farming has been tremendously enhanced. We have genetically altered insect-resistant crops. There is mass production and processing of food including freezing, preserving, and even manufacture of artificial foods. Travel has been augmented in an almost unbelievable manner in the past 50 years with worldwide travel, space travel, and weather information. Within the military, global positioning of missiles has freed the need for manpower to deliver arms and drone, pilotless spy planes have allowed information gathering without endangering personnel. There are computer-based, remote educational opportunities. People can actually earn degrees without ever spending time on a college campus. We also have dramatic alterations in libraries with computer cataloging of books and sources rather than the Dewey decimal system in card files, with which we all dealt not too long ago. Even entertainment has changed. Satellite television allows us access to multiple different channels. We can choose movies at any time and at almost any place. Cable television has brought enormous opportunities for expanded entertainment and information, and the iPod allows us to carry thousands of pieces of music in a pocket-sized device.

Medicine also has changed enormously. We now have new drug therapies that have been designed with computer modeling. Human surgery is frequently analyzed and customized by computer modeling. The human genome project has a vast potential to provide gene therapies for a variety of previously untreatable diseases.

Ophthalmology has benefited as well. There has been a technology explosion within ophthalmology, most of which has been related to cataract and refractive surgery. We now remove cataracts through two 1-mm incisions and have enormously expanded and enhanced technology in intraocular lens implants used in conjunction with the removal of cataracts and refractive lens exchange. We have a variety of


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intraocular lens implants that allow us to treat not only pre-existing hyperopia and myopia but also astigmatism, presbyopia, and spherical aberration.

Early technology is always expensive, but as it improves the cost frequently decreases. When Dr. Fine was an undergraduate, the Massacusetts Institute of Technology was the only college campus that had a computer. It occupied six floors of a building and was less sophisticated than a calculator the size of a credit card that is available to all of us today.

The United States Center for Medicare and Medicaid Services (CMS) had three choices in dealing with this relentlessly expanding technology. It could try to pay for new technology for Medicare recipients and rapidly go broke. Medicare could limit access to new technology by refusing to pay for it, thereby making Medicare recipients second-class citizens with respect to medical care. Until very recently that was the case because accommodative intraocular lenses (IOLs), such as the eyeonics crystalens IOL, were available only to patients who were not Medicare recipients and were allowed to pay for them out of pocket. Medicare recipients were not allowed to pay out of pocket without losing their Medicare benefits, and physicians who participated in Medicare could not accept out of pocket payments, except for the deductible, without losing their ability to participate in the Medicare program.

The third option for Medicare was to allow beneficiaries to pay additional amounts for new technology. A new ruling by the CMS has done exactly that by allowing Medicare recipients to pay out of pocket for presbyopia correcting IOL technology. This is greatly beneficial to Medicare patients who can now purchase new, enhanced technology that they can afford, rather than being limited only to basic technology. We will soon see a dramatic shift in the way health care is delivered from high-volume, efficient low-cost care, which is the system that has evolved since Medicare was enacted, to high-quality personalized, pay-as-you-go care. This will be of enormous benefit for all patients, as those senior citizens who cannot purchase advanced technology will still, through Medicare, be able to have adequate care for all of their medical needs. These changes in how we view and incorporate new technology into our practices will become ever more global. Similar changes are likely to eventually take place in every developed nation around the world.

This issue of the *Ophthalmology Clinics of North America* investigates our current knowledge of the physiology of accommodation and the pathogenesis of presbyopia as building blocks in the development of ophthalmic medical devices.

We take a broad view of the correction of presbyopia, from monovision contact lenses through flexible injectable polymers. In between, we examine keratorefractive approaches to pseudo-accommodation and the burgeoning field of intraocular lenses. From devices that the US Food and Drug Administration has approved to models just starting clinical trials, we consider a full spectrum of multifocal and accommodative designs.

Given the recent ruling by the CMS to allow beneficiaries to pay for services related to the correction of presbyopia at the time of cataract surgery, many surgeons who have limited their practices to cataracts will now find themselves in an environment becoming decidedly more like that of refractive surgery. High expectations, increased investment, and enhanced outcomes will demand more of the surgeon's time and energy. The ability to change an individual's quality of life by providing functional vision at all focal distances remains today a novel and gratifying process. As refractive lens exchange becomes a more frequently performed procedure and intraocular lens technology extends the range of functional vision, surgeons will be able to continually improve on their results.

This issue of the *Ophthalmology Clinics of North America* represents a complete introduction to the state-of-the-art regarding the correction of presbyopia.

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