Don Minckler, MD

Dr. Minckler reflects on the role of glaucoma drainage devices and the importance of specialized training.

1. What is the outlook for neuroprotection in glaucoma?

The concept of neuroprotection as it might apply to glaucoma has been a valuable stimulus to research, both clinical and basic. In theory, drug therapy might be applied to make the optic nerve head tissues less vulnerable to pressure-induced damage, or the retinal environment in which ganglion cells live might be altered in a favorable manner. At present, however, there is no solid evidence that neuroprotection is clinically useful. We all await the results of the ongoing memantine study (Allergan, Inc.); data should be available in the near future.

2. How have glaucoma drainage devices affected the treatment of glaucoma, and how will shunts and the technique for their implantation change over the next decade?

Drainage devices (aqueous shunts) have had a beneficial impact on clinical outcomes among the more complicated varieties of glaucoma. The Molteno implants (Molteno Ophthalmic Limited), the Baerveldt devices (Advanced Medical Optics, Inc.), and the Ahmed devices (New World Medical, Inc.) have been highly popular worldwide. Glaucomas that cannot be controlled with standard medical, laser, or surgical therapies may be candidates for aqueous shunts. Specific examples of glaucomas where shunts have been beneficial include congenital glaucomas with anterior segment anomalies, some uveitic glaucomas, certain iridocorneal endothelial syndromes, and traumatic glaucomas with substantial damage to the anterior segment and conjunctiva.

Aqueous shunts will continue to evolve. Useful future changes in current designs will probably include constructing them from less inflammatory materials, which will result in thinner, more permeable capsules and perhaps smaller explant plates. Evidence from experimental studies suggests that thinner filtration blebs will have higher hydraulic conductivity and allow smaller devices. Continuing basic research may lead to design improvements that will decrease the chances of fibrous obstruction of the posterior tube-plate junction or junctions between interconnecting tubes and plates. The idea of impregnating explant materials with fibrosis-inhibiting drugs needs further exploration. Unfortunately, because the market for glaucoma drainage devices is small, relatively few companies will be willing to invest heavily to advance the technology.

3. What role does the peer-reviewed literature play in the field of glaucoma today?

The peer-reviewed literature will remain the primary source of solid evidence on which to depend for clinical-management changes. We are now in the era of evidence-based medicine, and all practitioners should embrace this new paradigm. Becoming a savvy consumer of evidence-based medicine requires, at least for many of us, learning new information and techniques about how to critically evaluate peer-reviewed literature. Our best teachers in this regard are epidemiologists and biostatisticians.

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FAST FACTS

- Professor of Ophthalmology and Emeritus Director of Glaucoma Services at the University of Southern California (Keck) School of Medicine in Los Angeles
- Chair of the ANSI Z-81 American Academy Subcommittee on Glaucoma Drainage Implants for the American National Standards Institute, 1986 to 1991
- Recipient of the AAO Senior Honor Award and Secretariat Award, 1997 and 2002, respectively
- Co-investigator for the Collaborative Initial Glaucoma Treatment Study, 1993 to 1998
- Elected member (1986 to present), Member of the Executive Committee (1990 to present), and President (1998 to 2003) of the Glaucoma Society, International Congress of Ophthalmology
- Editor-in-Chief, *Ophthalmology*, 1995-2002
- Director, American Board of Ophthalmology, 1999 to present

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"Acquire some variety of special skill, which generally requires extra training beyond fellowship. Outside the usual array of clinical subspecialty topics, several subjects ... [have] enormous application to a successful academic career."

4. Which principles of pathology would it behoove glaucoma practitioners to review?

Glaucoma specialists who perform surgery need to become as skilled as they can at assessing and managing conjunctival inflammation. Antifibrotic agents are currently the most useful drugs to help achieve successful outcomes with trabeculectomy, but they may be replaced in the future by more sophisticated drugs, especially immunologic agents that specifically target and inhibit fibroblasts.

5. What tips would you offer to ophthalmologists entering academia?

The best advice I can think of is to acquire some variety of special skill, which generally requires extra training beyond fellowship. Outside the usual array of clinical subspecialty topics, several subjects with enormous application to a successful academic career in this time of evidence-based medical science include biostatistics, epidemiology, and information management. The methodologies involved in these subjects can be fruitfully applied to virtually any other subject with great benefit. ❑

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