Who Should Teach Refractive Surgery?

Jorge L. Alió, MD, PhD

Once the province of a few skilled subspecialists, refractive surgery has entered mainstream ophthalmology practice. Worldwide, ophthalmologists are either already performing or are interested in learning refractive procedures. Organizations centered around refractive surgery have been created, refractive topics are being published in journals at an unprecedented rate, and the popular media publishes news of “breakthroughs” almost daily.

Perhaps most indicative of the growth in refractive surgery is the involvement of industry. Corporations exclusively devoted to refractive surgery have been created and have invested enormous resources into the development and promotion of lasers, microkeratomes, and other devices. In fact, it may be said that industry has assumed the most influential position for the introduction of new refractive procedures and technology and the teaching of their use.

Can domination of our medical specialty by such commercial interests be healthy? Is the apparent “free-market madness” safe for the public and for the unwary surgeon? Would leadership for our subspecialty that is free of commercial interests be preferable and where could it be found? Is it sufficient to teach a surgeon a surgical technique without teaching the basic science underlying the technique? These questions do not have easy answers, but I and other academically-based ophthalmologists believe universities must play a bigger role in this area.

Education by Industry

The rapid, “trial-and-error” style of growth of refractive surgery in the last 20 years took place in a commercially dominated, confusing environment. Surgeons with persuasive personalities taught valid—as well as questionable—techniques in industry-sponsored weekend courses. Wise surgeons did not proceed to operate without further education and practice, but not all were wise. Disaster often followed use of techniques such as 16-incision radial keratotomy with intersecting transverse keratotomy, trapezoidal keratotomy with intersecting incisions, hexagonal keratotomy (and its offspring, Hex-T), and automated lamellar keratoplasty. Not taught in courses, but also disastrous failures were hot-needle thermal keratoplasty, and 1950s style of phakic intraocular lenses.

These and other unfortunate techniques were never subjected to the discipline of formal clinical trials and peer-reviewed journal publication of results. The techniques produced good results, so said the “pioneer” surgeons, and why hold up general adoption for years to undergo the rigors of a clinical trial? Thus, many techniques were propagated without an understanding of possible corneal reactions, complications, stability, and long-term implications.

This is not to say that industry did not act responsibly for the most part and make a significant contribution to the advancement of refractive surgery. On the contrary, excellent equipment and some of the best and most complete data came from industry-sponsored trials for United States FDA device approval. However, these trials took much time to complete and many surgeons proceeded with techniques without waiting for validation from the studies. Some companies sponsored brief but useful skills-transfer courses for users of their instruments; this was preferable to sales alone.

Education by University

Where were the university faculty during this period, and where are they today? For the most part, they either stayed clear of the fray or officially opposed such “buccaneer” surgery. Some thought that surgery on a normal, non-diseased eye was unethical and irresponsible, and would not be considered as part of a teaching curriculum.
Admittedly, this assessment was often correct in the early days of refractive surgery. Today, however, techniques have changed and surgeries are safer, more effective, and give more stable results. Myriad sophisticated pieces of technology both for ocular examinations and for surgery are available and their numbers grow annually. How is an aspiring refractive surgeon to learn their use in a commercially free environment? How can a surgeon obtain practice time and determine his or her readiness for a particular procedure?

Although the state of the art of refractive surgery has improved dramatically, answers to these questions and instruction in techniques are still not available from the universities. The principles and practice of refractive surgery are rarely included in residency teaching programs. Guidance, intelligent, independent information, and definitive standards of excellence are not provided. The ophthalmologist is on his or her own in seeking information and instruction and often must turn to industry.

Sensing the educational void, professional associations, such as the International Society of Refractive Surgery and the European Society of Cataract and Refractive Surgery, offer well-designed, systematic courses, such as the ISRS GLORY program. These programs are commendable for they do not depend on commercial direction or show only one type of technique. Their role could be to supplement university teaching.

But we still need the universities for their systematic approach, rigor of instruction, and commercially unbiased evaluations. However, the lack of resources in residency programs cannot be overlooked. This is particularly true in countries where insurance and governmental funding of education is declining and residency slots are being reduced. Expanding curricula to include refractive surgery becomes a major practical limitation in these cases.

Nevertheless, the failure of universities to address refractive surgery must be challenged. The need for excellent surgery is especially important in this subspecialty because the goal is to improve the optical performance of the normal eye. Doing no harm is of vital importance. A surgeon’s first series of cases with a new surgical procedure or medical device, such as phakic intraocular lenses or microkeratomes, should be observed directly and evaluated by an experienced monitor. Furthermore, pilot studies to define protocols and clarify the efficacy and safety of new devices should be free from commercial influence and sponsored by independent institutions.

Millions of visually handicapped patients worldwide have or will undergo refractive surgery to gain independence and improve quality of life. We owe it to them and to our profession to assure that surgeons performing these procedures are properly trained. It is time for our medical universities to take notice.

Recommendations

What solutions can be offered by universities regarding refractive surgery teaching? New faculty should be recruited in those centers in which local university faculty are behind the learning curve in refractive surgery. Such new faculty should be chosen from local well-credentialed refractive surgeons with established practices and good professional and social reputations. Other university centers may elect to build up refractive surgery units that, properly managed, can become self-financed. Patients should be attended in these new centers as a new and probably less expensive alternative than independent clinics. These new centers would sponsor teaching and clinical research under highly qualified supervision. Refractive surgery training should be offered during residency or as a postgraduate fellowship. Including refractive surgery training as a regular part of the teaching program of university ophthalmic departments presents a new challenge for university administration and management (see Aaron MM, Aaberg TM Sr. Ophthalmology resident training in refractive surgery. Am J Ophthalmol 2001:131:241-243).

Conclusion

Refractive surgery is an important new area of the ophthalmological profession that deserves and does not yet have an organized system of teaching. Either universities or independent scientific professional organizations should provide such teaching and should establish certified standards of knowledge and excellence in refractive surgery for ophthalmologists who have not had such teaching during their residency programs. The traditional fellowship program will be the optimal system for those who choose refractive surgery as their main profession, but alternatives should also exist under academic or certified control, to guarantee quality of teaching and acquired skills for ophthalmic surgeons who want to add refractive surgery to their practice. This challenge deserves immediate attention due to the recent explosive development and expansion of refractive surgery.