BRIEF COMMUNICATION

The Future of e-Facial Plastic Surgery

In an editorial, the editor of the Archives, Wayne F. Larrabee, Jr,[1] MD, challenged physician scientists to describe their view of the future of facial plastic and reconstructive surgery in the next millennium. In addition to the opportunities in biomaterials, wound healing, and genetic engineering that he mentioned, I predict that advances in telecommunications and information technology and the growth and development of the Internet will largely color the future of facial plastic surgery. I also predict that future practitioners of the art of facial plastic surgery will have exciting informational tools to help them and their patients. Three specific advances—telefacial plastic surgery, integrated decision support systems, and computer-enhanced, 3-dimensional–guided surgical systems—are most likely to occur.

TELEFACIAL PLASTIC SURGERY

Advances in information and telecommunications technologies will guarantee the arrival of large bandwidth, inexpensive, secure Internet access. Surgeons will routinely monitor their patients postoperatively via small, handheld home computer–enabled cameras or personal digital assistive devices. Patients with chronic diseases will be monitored by real-time disease management software. Patients will be able to transmit vital signs, blood test samples, and digital photos of wounds and lesions to their surgeons when and where they want to. Online consultations will become commonplace, and the legal, regulatory, and socioeconomic barriers will disappear.

INTEGRATED DECISION SUPPORT SYSTEMS

The art of facial plastic and reconstructive surgery will never be eliminated. However, clinical judgment, ie, the ability to make the correct clinical decision based on pattern recognition accumulated from experience, will be enhanced by smarter, integrated clinical decision support systems. Surgeons performing a rhinoplasty, for example, will be able to have preoperative images electronically analyzed. The result will be surgical recommendations based on previous outcome patterns. Specific reconstructive defects lend themselves to analysis by smart systems designed to recommend several reconstructive options. In essence, the collective wisdom of the past generations of facial plastic surgeons will be included in one large data repository that will be available to any surgeon with a computer and a modem.

COMPUTER-ENHANCED, 3-DIMENSIONAL–GUIDED SURGICAL SYSTEMS

Image-guided surgical systems are now a standard part of skull base surgery, sinus surgery, and neurosurgery. The applications will extend to facial plastic and reconstructive surgery. These systems will continue to evolve and become cheaper, smarter, and faster. Color renditions will be routine. "What if" scenarios will allow the surgeon to see in real time the effect of a surgical maneuver before he or she does it. For reconstructive surgery, the computer-assisted device will produce a reconstructive template in the operating room so that the final result will be more precise and functional. Telerobotics will be integrated into the system so that implants will be precisely contoured; delicate maneuvers will be better controlled; and hidden sites, such as the nasal dorsum, will be virtually seen. Telerobotic surgery will allow surgeons to "assist" one another from anywhere on the planet.

This is the most scientifically and technologically exciting time to practice medicine in history. Discoveries in the information sciences will truly continue to make us better physicians.

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REFERENCE

1. Larrabee WF Jr. The future of facial plastic surgery. *Arch Facial Plast Surg.* 2001;3:6.