

State of the Art

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Implementing a new surgical microscope in your ASC

By John A. Hovanesian, MD, FACS

First in a three-part series focused on the newest technologies for the ASC.

As times continue to change, the world of medicine is becoming a place in which physicians must adapt and be ever more astute business people. Ownership in a surgery center has become a way for refractive cataract surgeons to address this need, generating income from the work we already do. Furthermore, access to and use of ASCs not only provide us control over the type of environment in which we are treating patients — in fact, an increasing number of care quality surveys show surgery in specialty centers are safer than those performed in multispecialty hospitals — but also better scheduling control, as ASCs tend to be more efficient time-wise than hospital operating rooms.



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The next few State of the Art columns will look at some of the key aspects to setting up your own ASC, giving insight into the newer technologies available. In this issue, our focus will be three of the newest surgical microscopes currently on the market.

An important addition

If you are just beginning the process of opening an ASC, or even if you have already established one, there are two main reasons for incorporating a newer microscope into the mix.

Although microscopes generally do not wear out, the optics of the older models are not nearly as good as those featured by the newer versions. Just as we have become accustomed to upgrading phaco machines every few years because of improvements in software, fluidics and control of surgery, similarly, we should not assume an old microscope is something we will use for our entire career. Think of the upgrade as an investment in your results; if the improvements in visualization allow you to perform better, you will end up with even more satisfied patients.

Another aspect to consider is the attractiveness of your surgical center to other surgeons. If your ASC provides open access to community physicians, you are going to need the technology and equipment they want to use to get them there.

Optical systems

Two of the newest optical systems currently available are the OPMI Lumera 700 (Carl Zeiss Meditec) and LuxOR Optics (Endure Medical). Both have a number of advantages over older microscope models.

Lumera uses a patent pending stereo coaxial illumination, providing improved contrast, brightness, depth of field and a heightened red reflex. The microscope also features integrated high-definition video recording capabilities and a wireless foot control panel, as well as the RESIGHT fundus viewing system and inverter integrated in the binocular tube. At around \$80,000, the Lumera is more expensive than some of the other microscopes available and would be a considerable investment; however, for those who have an old system, or for those who truly want an advanced system, the purchase could be worthwhile.

The LuxOR Optics microscope features Illumin-i — patent-pending triaxial, collimated illumination for enhanced depth perception, contrast and a homogenous red reflex. It has a 0-215 degree inclinable binocular, providing the surgeon with extended range of movement for better ergonomics and positioning. Endure also offers an upgraded model, the Libero-XY, which features a wireless foot pedal and a color touch-screen control panel and allows for up to 12 surgeon presets. At \$40,000 and \$45,000, respectively, the Endure microscopes are considerably more affordable. Having used both of these systems myself, I believe the contrast is comparable to that seen with Lumera. Although subtle differences exist, I would be comfortable using a system like the Endure for complicated surgery.

Digital 3-D technology

For the truly technologically oriented, the TrueVision 3D surgical system offers a completely different approach to visualization during cataract surgery. Although the system still utilizes an operating microscope, there is a 3-D camera in the optical pathway rather than having the surgeon looking through the oculars. Each eyepiece has a separate camera collecting data. The two images are separated by the microscope, so a 3-D image can be projected, either by projector onto a screen or onto one of the newer LCD 3-D televisions. With the new higher resolutions available through projection and television systems, the resolution is adequate for performing intraocular surgery. Taking into account all of the equipment needed for this microscope, the total investment is about \$100,000.

One of the advantages of being able to view surgery in this manner is ergonomics. The surgeon no longer needs to lean forward in an anatomically uncomfortable position for long periods of time while performing surgery. Instead, he or she sits up and watches the screen in front of him. If the surgeon desires to look through the optical system, however, this is possible because the pathway is still open.

The second advantage of the TrueVision system is its recording and teaching capabilities. Everyone in the room who can see the screen has the same view as the surgeon. Thus, if the surgeon later wants to review his cases or show them to others, he can do that, and the view is just the same as it was during the actual surgery.

A third advantage — and one we are only just beginning to see the real value of — is that because the system is run using a computer, the surgeon can also overlay computer-generated graphics onto the projected image. If the surgeon wanted to place an incision on the axis of highest astigmatism, he or she could combine the patient's topography with a preoperative photograph of the eye in which the patient is sitting upright. The computer can then provide real-time registration of the iris, adding a high degree of accuracy to the procedure. In fact, anything that requires careful measurement of the eye can be done with the precision of a computer overlay. This capability has recently received FDA approval on the TrueVision system, adding real value to this pricey but highly advanced system.

John A. Hovanesian, MD, FACS, can be reached at Harvard Eye Associates, 24401 Calle De La Louisa, Suite 300, Laguna Hills, CA 92653; 949-951-2020; fax: 949-380-7856; e-mail: drhovanesian@harvardeye.com.

Disclosure: Dr. Hovanesian has no direct financial interests in the products or companies mentioned in this article.