

Cataract Surgery in Three Dimensions

Coming soon to an OR near you.

BY ROBERT J. WEINSTOCK, MD

Hollywood producers and actors are not the only ones working with three-dimensional technology these days. Thanks to recent advances in microscopic viewing technology, cataract surgeons and other specialists are beginning to enjoy the benefits of live, heads-up, three-dimensional visual displays of the microscopic surgical field. Over the past several years, TrueVision Systems, Inc. (Santa Barbara, CA), has been optimizing the TrueVision System for use in the OR. A few surgeons around the country are now routinely operating without looking directly into the microscope for procedures such as cataract surgery; ear, nose, and throat surgery; and neurosurgery. Since trying the prototypical device for performing a cataract procedure in late 2007, I have been enjoying the system's benefits and using it routinely in cataract surgery.

PARADIGM SHIFT

The TrueVision System consists of a high-definition three-dimensional camera that attaches to the surgical

microscope via a beam splitter. The signal from this camera is transmitted to a computer processor, which sends the images from the left ocular and the right ocular to a three-dimensional, high-definition, flat-panel display system that is on a stand. The surgeon as well as other OR personnel wear polarized three-dimensional glasses in order to see the surgical field on a large screen. This paradigm shift frees the surgeon from the constraints of looking through the microscope. It also allows others in the OR (including doctors, surgeons in training, scrub technicians, and industry professionals) to share the surgeon's view of the surgical field in its entirety and in terms of depth.

BENEFITS

Ergonomics

The TrueVision System allows the surgeon to sit in a more ergonomic and natural position while operating. I believe a more comfortable surgeon will encounter fewer surgical complications. Certainly, improved ergonomics should lengthen his or her career. Nationwide studies have shown that a vast majority of microscopic surgeons suffer from chronic back and neck injuries.¹ If used regularly, the TrueVision System may help surgeons avoid these problems.

Education

The system also offers benefits in terms of education. Multiple residents and/or fellows in training can view the surgical field live in high definition in the OR or a nearby room. This option may enhance the learning of operative techniques by surgeons in training. The TrueVision System can also record surgical cases in three dimensions for display at grand rounds symposia or ophthalmic meetings. The audience will thus have a much more immersive and realistic viewing experience.



Figure 1. The TrueVision System with the cataract toolset helps to guide the surgeon's placement of limbal relaxing incisions.

