Brainstorm: Trends In Cameras & Video Systems

Advancements in surgical technology and procedures are driving further developments in cameras and video systems in the OR

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Surgical Products: How would you say advancements in surgery (for example, minimally invasive techniques) have driven developments in camera/video technology?

Zimmer: I believe that advancements in technology for such devices as surgical instruments, implants, wound care products and endoscopic camera systems are the primary drivers behind advancements in all surgery specialties. These technology breakthroughs help enable surgeons to utilize their professional training and creativity to attempt new techniques that ultimately improve patient outcomes.

As more and more procedures can and are being done minimally invasively, there is clearly a need for advanced camera and video technology. This is due to the fact that the surgeon depends entirely on the video quality since the camera and monitor offer the only window into the patient's body.

Surgical Products: How have advancements in video technologies affected surgery?

Zimmer: Of course, quality video and imaging are very important for all minimally invasive surgeries (MIS) utilizing endoscopic, laparoscopic and arthroscopic camera

systems. Procedures that involve pathology can also benefit from HD video and video conferencing. For example, in a properly equipped hospital, the surgeon can remotely collaborate on an open surgery case with a pathology lab in real time.

The resolution achieved with HD now provides the remotely located pathologist with a view of the patient as clear the surgeon's who is standing over the operating table. And generally, video in the OR provides the crucial ability to record rare and unique cases, necessary for education and expert collaboration.

Surgical Products: What does the ability to take video and images offer to the surgeon and surgical staff during a procedure?

Zimmer: In addition to being a diagnostic aid in MIS, cameras and video are important for patient documentation as well as for observation, remote consultation and education. When all staff in the OR can view the procedure in brilliant detail on a large monitor, operations can be performed in better unison and assistant surgeons can learn surgical techniques more easily from a magnified and unobstructed field of view.

With today's video communications technologies, including both video conferencing and IP cameras, professionals from around the world can experience the same view and remotely collaborate in real time. The sophisticated digital capture systems available today record both still and video images.

Patient documentation is obviously important, and these systems can send images to a server on the hospital network for safe storage where surgeons can access the files from a PC on the network for editing and case review. Furthermore, a surgeon can walk out of the OR with a Blu-ray disc or a thumb drive in hand containing a PowerPoint file embedded with images of the procedure ready for presentation from his laptop.

Surgical Products: How does camera and video technology improve patient care in the OR?

Zimmer: Basically, these technologies provide an important diagnostic tool for the surgeon and communications tool for information recording, sharing and collaboration. Surgeons now have more efficient and accurate technology at their disposal to develop advanced techniques and improve patient safety delivering better patient care.

Surgical Products: High-definition (HD) technology is becoming more prevalent in cameras/video systems in the OR. How does HD technology improve video/imaging in the OR?

Zimmer: Simply put, the improved resolution and wider field of view enabled by 1920x1080 HD deliver enhanced visualization of the patient during procedures which facilitates better patient outcomes. The exquisite detail contributes not only to improved performance, but also to reduction of fatigue during long procedures.

As a result, the large majority of all new endoscopic camera systems purchased by facilities today are HD. In order to realize the full value of the beautiful HD images acquired by these state-of-the-art camera systems, that image resolution must be maintained throughout the surgical imaging workflow.

This is where it becomes critical to have HD solutions such as monitors, recorders or digital capture systems, printers, editing tools, projectors and video conferencing for presentation, and finally storage.

Surgical Products: Along with the ability to see images and video in the OR, why is documentation and the ability to save video and images important to a surgical team?

Zimmer: Patient documentation is often a requirement at the healthcare facility for maintaining detailed case history records, making some type of video recording a mandatory tool. Both digital and analog video images can be saved electronically or in hard copy form using printers. Archived images are important for case review and education in order to advance the practice of surgery.

***Surgical Products:* Can you discuss developments in 3D video in the OR? What does this technology offer for surgeons and the surgical team?**

Zimmer: Because 3D mimics the eye's natural 3D vision capabilities, it can theoretically offer the surgeon improved depth perception and spatial orientation. This may improve performance of common tasks requiring precision like grasping, suturing and dissection. As a result, it may also reduce procedure times and fatigue.

Surgical Products: What products should surgical professionals be aware of as this technology develops?

Zimmer: They should be aware of the fact that 3D endoscopy and robotic surgery systems are just starting to be developed. The industry is just beginning to conceptualize the various applications and benefits. There are various types of 3D video technology. Some require different types of visual aids (glasses, headgear, etc.) and there are also some glasses-free technologies that show promise.

Glasses-free systems potentially offer surgeons more comfort and confidence and enable them to see other activity in the OR using their natural vision. As more 3D solutions come to market, surgical professionals should evaluate all options since some systems may be more uncomfortable or limiting than others depending on the application.

***Surgical Products:* In addition to 3D video technology, where do you see technology related to cameras & video systems going in the future? What should surgical professionals be aware of in terms of new technology in cameras/video systems?**

Zimmer: Wireless technology is advancing rapidly. While signal reliability and lag

time continue to be the major obstacles, these issues will eventually be resolved. Wireless camera systems, monitors, printers and recorders will improve efficiency, portability and reduce integration costs. Also, development of image sensor technologies will continue to drive improvements in cameras.

Smaller, more powerful sensors will increase miniaturization of endoscopic systems. Advances in some sensor types, such as CMOS, offer the increased density and sensitivity needed to generate full HD resolution and higher brightness which is important for imaging in the low light environment inside the body. Furthermore, advancements in HD video conferencing and IP cameras will facilitate the growth of telemedicine.

***Surgical Products* is conducting a brief, one-question survey about healthcare insurance coverage.** Click here to answer the question. **[1] Thank you!**

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