Innovative techniques
Robotic surgery gives a glimpse of the operating room of the future.

While robotic surgery sounds like something out of a futuristic Hollywood movie, the first generation of surgical robots is being used in operating rooms around the world.

Although they can’t perform surgical tasks on their own, they are a useful tool for surgeons. Peter Schulam, M.D., Ph.D, and director of laparoscopic surgery at UCLA Medical Center, is a big fan of the efficiencies this technology brings to the operating table.

“If I give you a robot and it helps you see better, then I know that the variability for a particular task is going to decrease. Instead of having this wide bell-shaped curve of outcome, it will be very narrow,” he says. “That’s the goal of innovation and technology in the operating room.”

Smart Business spoke to Schulam about robotic surgery, the importance of medical innovations and how physicians work hand-in-hand with companies to bring new products to market.

How important are innovations such as robotic surgery in the medical world?

Without innovation, there is no forward progression of the science of surgery. At times, even though it may not be what we think is the most cost-effective or efficient manner, if we don’t continue to explore these areas, then we will be standing still and there will be no advances made within surgery.

If there is no one out there willing to explore, then unfortunately, it will never be ready for prime time. It takes people with a certain amount of patience and dedication to drive these technologies.

Who is typically involved in the development of these technologies?

Most of the medical innovations in the past have been driven by industry, but now there seems to be more of a collaboration or cooperation between industry and physicians. The two are working more closely, and, in fact, I think the more successful ventures are those that have a better collaboration with the surgeons and physicians involved in the workings of the technology.

What type of research and development processes are used?

A lot of it starts out with an idea. A prototype is developed, it’s usually tested in an inanimate system — basically just being sure that it functions as we suspect — then it may move into an animal system with a laboratory setting. In order to actually bring something to the patient, it becomes much more difficult.

Initially, it involves the internal review boards of hospitals, and then this information is usually taken by the company back to the FDA in order to get approval for use with humans.

How do you take something like robotic surgery from idea to practice?

We’ve learned that it’s difficult for surgeons or physicians on our own to bring something to market. Usually, once an idea seems to be brought to fruition, and we feel as though we have reasonable inanimate or animal testing, then we may go out and look for industry to help us further test, and then sponsor, its production. That’s if something comes as a pure idea from within the hospital.

Other times, even from the outset, the idea may be generated by a physician directly to a company. Then, working together with the company, the idea is brought to fruition. Most of the time, especially if you talk about things like robotics, industry is leading and we’re collaborating.

What changes in training will this type of technology require?

We don’t know. What we’re trying to do overall with innovation is we want to improve the standard of care provided to the patient. The question is, how do you improve the standard of care?

Instead of training people in the actual operating room when we’re operating on patients, can we use innovations to train surgeons in more of a simulated environment? That would improve skill sets so that when the patient and the physician actually meet, the physician has a higher level of skill.

The presumed learning curve would have been addressed early on in a simulator or inanimate model, much like how a pilot learns how to fly planes.

What efficiencies does robotics create in medical operations?

Robotics is what I like to refer to as an enabling technology. There are a lot of surgeons who, without the robot, can perform a particular task, but it’s not every surgeon. If you take 10 surgeons and ask them to perform a particular task, some will do well on it and some may not do as well.

What the robot does is it levels the playing field and it allows all 10 surgeons to accomplish the task at an acceptable standard.

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