MEDICAL SCIENCE MONITOR

EDITORIAL

e-ISSN 1643-3750
© Med Sci Monit, 2017; 23: 1856
DOI: 10.12659/MSM.904666

Received: 2017.04.03
Accepted: 2017.04.03
Published: 2017.04.17

Robotic Surgery: Fast Forward to Telemedicine

George B. Stefano

Executive Vice President, International Scientific Information, Inc., Melville, N.Y., U.S.A.

Corresponding Author: George B. Stefano, e-mail: gstefano@sunynri.org

Since the realization that certain maladies can be corrected via surgical techniques, we have been consumed by the desire to constantly advance the tools of surgery, as well as the techniques. In recent times, computer-assisted surgical tools have emerged and are growing in their use. The Puma 560 emerged in 1985 for brain biopsies and laparoscopic surgery. Prostatic surgery was performed by the Probot in 1988. In 1992, fittings in the femur were placed using the ROBODOC. These early robotic endeavors gave rise to AESOP, ZEUS and the relatively intuitive *da Vinci*® Surgical System. These advances reflect the rapid growth of knowledge in the technology sector. These ever increasingly complex robotic-driven procedures are favored because this surgery provides a less invasive and therefore more tolerable "surgical" procedure for patients. In turn, these less invasive experiences may also allow for faster recovery times, reducing hospital stays and potentially costs. Importantly, this technology is accompanied by the development of more targeted surgical interventions. On the negative side, these technologies are initially expensive. However, as is always the case, there is hope that future devices will be more economical as more institutions invest. Another trend which may reduce costs is in the design of the robotic devices to incorporate a common central core of technology, to which other sub-devices can be attached, offering additional cost savings while enhancing flexibility.

Telemedicine, using this robotic technology as its core, may also reduce the costs associated with today's robotic expenses, providing expertise outside the performing operating room and reducing personnel presence in the operating theater. Telemedicine, by its very nature, must be done in real time, with zero latency in the procedure. Latency is an important issue at present, as is the chance for human error, which always exists. Human skill is an essential component of these systems, since a running program may not be able to adjust to a dynamically changing procedure. It is easy to predict that this trend toward robotic-assisted surgery will only increase, in both its ease of learning and sophistication, a phenomenon that must be monitored for patient safety and outcome. Bioinformatic pattern-recognition algorithms from past saved procedures, will be incorporated into new programming in a rapid manner, further enhancing automated surgical procedures. Importantly, deciding when to allow the technology to "move" on its own sensors will be essential to its future usefulness in medicine. We may be developing the "driver-less" car.

MeSH Keywords: **Distant Surgery • Economic Surgery • Future Surgery • Medical Robotics • Medicine • Surgery • Telemedicine**

Full-text PDF: http://www.medscimonit.com/abstract/index/idArt/904666

401 — — —

Indexed in: [Current Contents/Clinical Medicine] [SCI Expanded] [ISI Alerting System] [ISI Journals Master List] [Index Medicus/MEDLINE] [EMBASE/Excerpta Medica] [Chemical Abstracts/CAS] [Index Copernicus]