

THE ROBOTIC SURGERY

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ABSTRACT;

The field of surgery is entering a time of great change, spurred on by remarkable recent advances in surgical and computer technology. Only recently have robotic systems made their way into the operating room as dexterity enhancing surgical assistants and surgical planners, in answer to surgeons' demands for ways to overcome the surgical limitations of minimally invasive laparoscopic surgery. The first generation of surgical robots is already being installed in a number of operating rooms around the world. These aren't true autonomous robots, but they are lending a mechanical helping hand to surgeons. Remote control and voice activation are the methods by which these surgical robots are controlled. Robotics is being introduced to medicine because they allow for unprecedented control and precision of surgical instruments in minimally invasive procedures. The ultimate goal of the robotic surgery field is to design a robot that can be used to perform closed-chest, beating-heart surgery. daviinci surgery and most suceeful method among all.

KEY WORDS: dexterity enhancing, Da vinci surgery, mechanical arm laproscopic, zeus ,3D console.

INTRODUCTION

Robotic surgery, computer-assisted surgery, and robotically-assisted surgery are terms for technological developments that use robotic systems to aid in surgical procedures. Robotically-assisted surgery was developed to overcome the limitations of pre-existing minimally-invasive surgical procedures and to enhance the capabilities of surgeons performing open surgery.[1-5]

In the case of robotically-assisted minimally-invasive surgery, instead of directly moving the instruments, the surgeon uses one of two methods to control the instruments; either a direct telemanipulator or through computer control. A telemanipulator is a remote manipulator that allows the surgeon to perform the normal movements associated with the surgery whilst the robotic arms carry out those movements using end-effectors and manipulators to perform the actual surgery on the patient. In computer-controlled systems the surgeon uses a computer to control the robotic arms and its end-effectors, though these systems can also still use telemanipulators for their input. One advantage of using the computerised method is that the surgeon does not have to be present, but can be anywhere in the world, leading to the possibility for remote surgery.[9-18]

In the case of enhanced open surgery, autonomous instruments (in familiar configurations) replace traditional steel tools, performing certain actions (such as rib spreading) with much smoother, feedback-controlled motions than could be achieved by a human hand. The main object of such smart instruments is to reduce or eliminate [6-11] the tissue trauma traditionally associated with open surgery without requiring more than a few minutes' training on the part of surgeons. This approach seeks to improve open surgeries, particularly cardio-thoracic, that have so far not benefited from minimally-invasive techniques.

METHODOLOGY;

Major advances aided by surgical robots have been remote surgery, minimally invasive surgery and unmanned surgery. Due to robotic use, the surgery is done with precision, miniaturization, smaller incisions; decreased blood loss, less pain, and quicker healing time. Articulation beyond normal manipulation and three-dimensional magnification helps resulting in improved ergonomics. Due to these techniques there is a reduced duration of hospital stays, [12-19] blood loss, transfusions, and use of pain medication.^[2] The existing open surgery technique has many flaws like limited access to surgical area, long recovery time, long hours of operation, blood loss, surgical scars and marks.

The robot normally costs \$1,390,000 and while its disposable supply cost is normally \$1,500 per procedure, the cost of the procedure is higher.^[1] Additional surgical training is needed to operate the system.^[4] Numerous feasibility studies have been done to determine whether the purchase of such systems are worthwhile. As it stands, opinions differ dramatically. Surgeons report that, although the manufacturers of such systems provide training on this new technology, the learning phase is intensive and surgeons must operate on twelve to eighteen patients before they adapt. During the training phase, minimally invasive operations can take up to twice as long as traditional surgery, leading to operating room tie ups and surgical staffs keeping patients under anesthesia for longer periods. Patient surveys indicate they chose the procedure based on expectations of decreased morbidity, improved outcomes, reduced blood loss and less pain.^[2] Higher expectations may explain higher rates of dissatisfaction and regret.^[4]

Compared with other minimally invasive surgery approaches, robot-assisted surgery gives the surgeon better control over the surgical instruments and a better view of the surgical site. In addition, surgeons no longer have to stand throughout the surgery .

RESULT ;

As the result we know how the robotic surgery is done all over the world and the advantages and disadvantages of

Robotic surgery studied. [20-29]

DISCUSSION;

The initial concept of robotics in surgery involved operating at a site remote from the surgeon. The ability to transpose surgical and technical expertise from one site to a distant site

(eg, a battlefield, space station, or developing country) was thought to expand surgical application. Although simple surgical procedures have been performed remotely, there is no clear path to practical application at present because of expense, transmission delay, and medical and legal issues.¹⁷ Application of telepresence surgery in the foreseeable future will probably be limited to telementoring rather than to remote manipulation. [30-35] Telementoring will allow the surgeon to teach or proctor performance of an advanced or new technique at a remote site using real-time teleobservation and monitoring.

CONCLUSION;

Advancements in the last 10 years made it possible to perform a surgical procedure without directly visualizing or touching the organ being operated on. Efforts are now focused on those techniques that facilitate the more complex tasks by minimally invasive approaches. Technologies that will impact surgery include those that allow procedures to be performed through natural orifices, such as treatments for esophageal reflux disease performed through a transoral rather than a laparoscopic approach and with flexible miniaturized instruments capable of delivering sutures, clips, or energy sources for excising or shrinking tissue. Developments in the remote delivery of focused energy (eg, ultrasound and radiation) under image guidance (eg, magnetic resonance imaging and ultrasound) will permit the ablation of tumors of the prostate, breast, liver, and lung without the need for an incision. Noninvasive approaches may potentially be used for ablating plaques in arteries, revascularizing the myocardium, treating tennis elbow, and nonunion fractures.[36-45]

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