It is Essential to Train Surgeons Using Robotic Surgery Simulations

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Abstract

The goal of this study is to bridge the knowledge gap between the core surgical training curriculum and Robotic Surgery Simulation (RoSS) by conducting a qualitative analysis of the literature. It will contrast the advantages of using robotic simulators for training with those of the current normative training approaches. The inclusion criteria involved choosing academic materials that concentrated on core surgical curriculum and Robotic Surgery Simulation (RoSS). We collated and carefully reviewed the pertinent literature that compared performance evaluations, surgical skill transfer, and assessment techniques between Robotic Surgery Simulation (RoSS) and the most recent open- and minimal-access surgery training platforms. RoSS platforms are more effective at assuring quick surgical skill acquisition and transfer, standardised, objective assessment, and training for non-technical skills.

Introduction

Although robotics is widely used in many different industries, its usage in medicine has increased. Urology and other medical specialties employ robotics. However, adoption of this surgical technology still lags behind robotic training and simulation. Prior to beginning surgical practise, there is a critical necessity to review surgical training and offer a training model, curriculum, and assessment to training students' doctors. This is crucial for enhancing surgeons' abilities, competence, and proficiency and lowering the risk of patient injury. The medical industry has had numerous advancements over the years that have permitted rapid expansion and transformation. Pharmaceutical advances, new information, cutting-edge technology, and practises are just a few examples of the many various ways that medicine is evolving. Robotic surgery has been discussed as a key tool in general training in a number of pieces of literature. Despite the fact that robotics are frequently used in the medical industry, their utility in training has been underrated. Robotic surgical systems have developed at an exponential rate to become a more complex form of minimal access surgery. The main idea is how robotic training can be used to perform laparoscopic and thoracoscopic surgery, where a supervisor stands back and lets the learner go through the intricate and difficult steps.

Despite the trainer being in charge, the robotics operation can be completed in the minimum amount of time. Since it takes a while for trainees to develop the necessary self-assurance and skills, traditional laparoscopy is used to address a variety of reconstructive issues. The Robotic-Assisted Laparoscopy and Thoracoscopic Surgery (RALTS) can speed up trainees' acquisition of the requisite skills, nonetheless. When used on children, robotic-assisted thoracoscopic and laparoscopic surgery is efficient and secure.

The da Vinci surgical systems and robotics programmes, the Multispecialty Robotics Training Center, and the intuitive UK are a few of these trainings. Numerous surgeries that could not have been performed if conventional methods had been employed are now possible because to these programmes. As a result, the students are given additional time before even touching the patient. The programmes that are accessible offer the essential abilities and practise that can be tailored to various surgical specialisations. Console training that includes supervised robotic operation, dry lab simulations, and wet lab simulations may be required when it rains. Advanced programmes involve excision, suturing, and diathermy. Basic laparoscopic skills, robot docking, port placement specific to the surgery, pneumoperitoneum, and patient positioning are often covered in patient side training.

Virtual reality simulators are also used in the training, which use a simple console control system to perform difficult tasks. There are now five virtual reality simulators available for training in robotic surgery. These consist of the Robotic Surgical Simulator, dV-Trainer, Sim Surgery Norway, or SEP Robot, Da Vinci Skills Simulator, and Robotic Mentor. Based on the results of laparoscopic procedures, it has been stated that using virtual simulators for training has been effective because they do not cause injuries. According to reports, these training simulators offer far more strengths than problems. Early training allows the students to become familiar with the material and quickly acquire the necessary expertise.

Conclusion

Although robotics have been used in other industries, the healthcare sector has lagged behind in adopting them. Robotic surgery simulation can be used, particularly in urology. According to studies, the use of robotics in the healthcare sector, and specifically during surgical training, has huge advantages for students since it fosters and enhances the development of surgeons abilities to lessen the risk of patient injury.