

Laparoscopic Cholecystectomy Simulation Model

Value Proposition

Cholecystectomy, the surgical removal of the gallbladder, is a common treatment of symptomatic gallstones and other gallbladder conditions. It was the 8th most common operating room procedure performed in the United States, and this procedure can either be done via open surgery or laparoscopic surgery. 90% of cholecystectomies in the United States are performed laparoscopically, which is now considered the gold standard for the surgical treatment of gallstone disease due to its advantages such as reduction in post-operative morbidity, tissue damage, pain, mortality and hospital stay.

Despite the above advantages, laparoscopic cholecystectomies require surgeons to learn new and challenging skills such as hand-eye coordination skills, translation of two dimensional video images to a three dimensional working area, and dealing with the fulcrum effect. These technical proficiency challenges mean that the traditional apprenticeship model "See one, do one, teach one" is insufficient for laparoscopic skills training. The apprenticeship model also uses patients as practice platforms thus introducing some legal, ethical and patient safety issues. Work hour restrictions, the cost of operating rooms time, and surgical complications are additional concerns associated with the apprenticeship model. Thus, there are increased calls for new training methods that facilitate the acquisition of surgical skills outside of the operating room and hence the need for new technologies/approaches such as simulators for training laparoscopic surgeons.

Technology

The invention is an anatomical physical model used to simulate laparoscopic cholecystectomy with the aid of a conventional Fundamentals of Laparoscopic Surgery (FLS) Laparoscopic Trainer Box.

Other Applications

The multi-functional invention can be used for other laparoscopic surgical procedures such as hernias since the technology is a multi-procedure and interchangeable simulation platform

Advantages

Traditional laparoscopic surgery training approaches include either the unethical use of animals or the traditional apprenticeship

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model "See one, do one, teach one" which is insufficient for laparoscopic skills training.

The invention will have the following advantages:

- Foster the development of psychomotor skills, muscle memory and dexterity required during the performance of basic laparoscopic surgery in a controlled and safe environment
- Cheaper than the costly virtual trainers
- The technology has a true tissue sense for training compared to virtual trainers
- Allows for training with real surgical instruments unlike virtual reality training
- Reduces risk to both medical students and patients by allowing learning, practice, and testing of skills in a protected environment prior to real-world exposure
- Eliminates the use of animals for surgical training which has been raising a lot of ethical issues and hence is now being phased out for ethical reasons