Some experiences in developing a Virtual Basic Laparoscopic Skill Trainer (VBLaST™)

by

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ABSTRACT

Minimally invasive surgery (MIS) emerged as a front runner in surgical technology, especially within the past two decades. Its success can mainly be attributed to fewer traumas, less blood loss, faster recovery and less hospital stay. To perform a MIS, surgeons require a different skill set with higher levels of competency. Skills like hand-eye co-ordination, ambidexterity, depth perception and transferring need to be mastered before one performs a MIS. To standardize the process of training residents, fellows and practicing surgeons in these skills, the Society of American Gastrointestinal Endoscopic Surgeons (SAGES) introduced Fundamentals of Laparoscopic Surgery (FLS) program. One of the components of this curriculum is the FLS trainer box for practice and training of these essential skills. This trainer box consists of five tasks that are intended to train residents in all essential skills needed for a laparoscopic surgery. This trainer box was thoroughly tested to incorporate all the fundamental skills involved in a laparoscopic surgery.

In this work we aim at developing and validating Virtual Basic Laparoscopic Skill Trainer (VBLaST™)-a virtual version of the FLS laparoscopic trainer box. All the tasks were developed to closely represent the FLS tasks. Force feedback is included as a part of VBLaST™ simulator. To evaluate the performance, objective scoring has been incorporated into the simulator design. The advantage of VBLaST™ over FLS trainer box includes faster feedback and no material costs. Part of the simulator has been validated. VBLaST™ demonstrated significant face validity and construct validity.