Transfer of Flexible Endoscopy Simulation Training to the Clinical Environment
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Approximately 5.7 million ambulatory colonoscopies are performed in the U.S. every year making large bowel endoscopy one of the most commonly performed procedures in the nation. Traditionally, surgery residents have learned flexible endoscopy techniques “on-the-job” by practicing on patients in hospital settings under strict guidance of experienced surgeons.

Simulation training is becoming more available to surgical residency programs and is often used as a method of “pre-training” residents on flexible endoscopy skills before practicing on actual patients. To date, only two types of flexible endoscopy simulators currently exist: Computer based (virtual-reality) and physical-model simulators.

The role of simulated endoscopy and its impact in clinical practice has been briefly described. Prior studies have mainly focused on teaching skills by the use of VR simulators. Comparison between endoscopic VR and physical-model simulators and their role in transferring skills to the real world needs to be addressed.

Transfer of simulated laparoscopic training has been widely studied in both animal and human scenarios. Simulation models focusing on the most technically demanding minimally invasive skills (e.g., laparoscopic intracorporeal suturing) have also clearly reported enhanced performance in the operating room. Despite these results, most research has focused on laparoscopic training and not in endoscopic interventions, as we propose.

Interns in the 2012-2013 class (n=27) will serve as participants in this study. At the beginning of the skills development rotation, each intern will perform one baseline colonoscopy on an actual patient under the guidance of experienced faculty (as is the current standard learning practice). These colonoscopies will be scored using the Global Assessment of Gastrointestinal Endoscopic Skills (GAGES), which was developed and validated by the Society of American Gastrointestinal and Endoscopic Surgeons (SAGES). After the baseline assessment, residents will complete a three-week flexible endoscopy curriculum developed at our institution. One-third of the residents will be assigned to a training condition using the GI Mentor (virtual-reality) platform exclusively, one-third of the residents will be assigned to train using the Kyoto colonoscopy model (physical-model) platform exclusively, and one-third of the residents will train using both simulators. At the end of the skills development rotation, residents will perform one posttest colonoscopy on a real patient under the guidance of experienced faculty and scored using GAGES.

Analysis of Covariance will be used to analyze the GAGES-scored post-training colonoscopies with the baseline colonoscopies serving as the covariate. Results will indicate whether the virtual-reality platform, the physical-model platform, both platforms, or neither platform contributes to improved real-world colonoscopy performance.

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