ACS 2023 Surgeons and Engineers: A Dialogue on Surgical Simulation Meeting

Challenges in Surgical Education

Video-based Task Deconstruction of Robotic Hiatal Hernia Repair

Haydee Del Calvo, MD; Min Peter. Kim, MD; Ray Chihara, MD, PhD, and Edward Y. H. Chan, MD

Houston Methodist Hospital, Houston, TX

Background: Robotic surgery is increasingly permeating the surgical arena and expanding the role of minimally invasive surgical approaches. Due to this, teaching robotic skills to general surgery residents is critically important. Video based learning has demonstrated significant advancements and can be used to further skills and shorten the learning curve. Studies have shown that there are specific aspects of video-based learning that are more beneficial, such as presence of narration and didactic illustrations. Video-based education addresses challenges within surgical training including increased knowledge retention within a continuously expanding field of information and a time-constrictive environment.

Current Challenges: We propose a surgical steps task deconstruction of robotic hiatal hernia repair with LINX paired with a surgical video following the same steps and using valuable video characteristics, as a standardized teaching tool. We gathered subject matter experts (SMEs) to create a list of procedural steps for a robotic hiatal hernia repair with LINX. Four SMEs developed a comprehensive ten-step task list for the conduct of the operation, beginning with a literature review and employing a modified Delphi process to reach a consensus. A surgical video was created using narration and anatomic labeling to guide the learner through the Delphi process agreed upon ten procedural steps. The goal was to create a standardized set of tasks paired with video representation to facilitate teaching robotic hiatal hernia repair with LINX to novice learners. Creation of a video-based instruction tool with consideration for important characteristics such as narration and anatomic labeling allows for standardization of the performance and teaching of the operation, facilitating formative and summative feedback and assessment for learners by the supervising surgeon.

Need of Innovation: Development of a standardized task list paired with video-based learning for a robotic hiatal hernia repair with LINX provides the structure for teaching complex robotic surgery safely and efficiently to general surgery residents. Video-based education offers significant advantages in trainee learning, performance, and experience therefore it should be an integral part of surgical education.