A Socially Distanced Approach to Surgical Education: A Hybrid Web and Simulator-Based Course for Laparoscopic Common Bile Duct Exploration

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Background

• The COVID-19 pandemic has had a profound impact on surgical education.

• Social distancing and travel limitations have made many large-scale in-person courses untenable.

• We adapted a laparoscopic common bile duct exploration (LCBDE) course into a “hub-and-spoke” model in which a central site led satellite centers using a hybrid web and hands-on simulator-based mastery learning curriculum.

Methods/Study Design

• Faculty underwent a pre-course “train-the-trainers” curriculum focused on principles of simulator-based education and use of the rating scale.

• Day-long courses were then led by faculty based in Chicago with content streamed via a web-based platform to satellite centers with local faculty and learners.

Mastery Learning model:

• Learners completed a simulator-based pre-test at the onset of the course.

• Course curriculum consisted of streamed lectures followed by hands-on deliberate practice using an LCBDE-specific simulator.

• Learners then completed an identical post-test on the simulator.

• The pre- and post-tests were assessed using a previously validated LCBDE procedural rating scale with a mastery standard that had been developed using a modified Angoff method.

Results

• 40 attending and fellow-level surgeon learners participated

• 2 courses held in Chicago and at 9 satellite locations.

• Mean of 9 years of post-training experience with 48% having ≤5 years in practice.

• Only 62% had any prior experience preforming LCBDE

• Pre-Testing: 88% of learners failed to meet the mastery standard (a score of ≥31 out of 45).

• Post-Testing: 100% met or exceeded the mastery standard

• Mean scores were significantly improved (pre-test 24 ±8 vs post-test 43 ±2; scale 0-45, p<0.001).

• When analyzed separately, even the five participants who passed the pre-test had a significant increase in their post-test scores (36 ±3 vs 43 ±2, p<0.01).

Conclusions

• Used a multisite course design to overcome COVID-19 travel restrictions

• Trained surgeons uniformly to a mastery standard in LCBDE

• This hybrid web and hands-on simulator-based approach can serve as a model for other procedural curricula during the COVID-19 era and beyond.

References: