DESIGNING A REALISTIC ANATOMICAL MODEL FOR TRAINING IN LAPAROSCOPIC BILE DUCT EXPLORATION

BACKGROUND

The laparoscopic common bile duct exploration is a Minimally Invasive Surgery (MIS) procedure for the removal of bile duct (CBD) stones. So far, procedural training is performed on animal tissue models. An anatomic realistic physical model for in laparoscopic surgical simulators is desired for training the procedure and required skills. A key aspect is the mimicking of human tissue in terms of visualization and tactility.

METHOD

An artificial model for training exploration of the bile duct was developed and prototyped. The model was tested with 27 experienced surgeons at the EAES Laparoscopic GI surgery course in Cairo (Egypt). Based on the test results, a second modified prototype was developed.

RESULTS

The model was built of elastic materials and consists of a disposable biliary tract and a corresponding anatomical landscape which can be used repeatedly. All procedural tasks of the CBD exploration were independently rated as ‘quite realistic’ (Median 4.0 on a 5-point Likert scale). Also the didactic value of the model was rated as ‘usable’ (Median 4.0 on a 5-point Likert scale).

CONCLUSIONS

We were able to develop and prototype an artificial model for training the CBD exploration. Overall the subjects were enthusiastic and assessed the prototype as a good training modality for the laparoscopic bile duct exploration. With this model the procedure can be trained realistically and repeatedly, at low costs, with real surgical instruments and in a safe and pressure free environment. Training on this modality increases the safeness in the operating room.