

Content and Face Validity of a Novel Homemade Laparoscope and Laparoscopic Camera Navigation Model: A Pilot Study

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Abstract

Introduction: With being introduced just over a century ago, laparoscopic surgery has become more popular than open. Although a steep learning curve is associated, a plethora of simulators, assessments and courses are available to master laparoscopic skills. However, despite a surgeon's expertise, it can be limited by the camera handler. Very little camera navigation training is provided. The aim of this study is to validate a homemade 0 and 30° laparoscope and laparoscopic camera navigation models.

Methods: Homemade laparoscope and various camera navigation models were created. 18 participants with no previous camera handling experience or training were recruited. A brief introduction was provided on the study purpose and tasks. They performed 3 tasks on the 0° laparoscope and model (camera navigation, in line orientation and opposite line orientation) and 30° laparoscope and model (camera navigation). Participants were then asked to answer face-content validation questionnaires for both the laparoscopes and models.

Results: The cost of the 0° laparoscope came to £25 and the 30° laparoscope was £20. In the face and content validity questionnaire, the lowest average score of 7.5 was achieved for how realistic it seemed. Of the models designed for camera navigation, model 5 was used with 0° and model 7 was used with 30°. From the questionnaire, the lowest average score of 6.9 was achieved for how realistic the models seemed. For the 0° camera navigation task, the group average of both attempts was 267 seconds. As expected, in line orientation (61 seconds) was completed quicker than opposite line (151 seconds). For 30° camera navigation, the group average time taken was 134 seconds.

Conclusion and future recommendations: The homemade laparoscope has proven to be inexpensive and from the exercises carried out by the participants, it is evident the models are effective. The laparoscopic models came to £2760. Improvements can be made to make them more effective and inexpensive. Subjective assessments should be looked into to see if they can be made objective. It will be interesting to assess participants again after 3-6 months. A follow up study with more participants would be recommended and also a constructive validity with novices, intermediates and experts.

Keywords: homemade laparoscope, laparoscope camera handling, laparoscopic surgery, laparoscopic camera navigation, laparoscope