**INTRODUCTION**

Stereoscopic, three dimensional video monitors have improved significantly in display quality and come down substantially in cost making their utilization in laparoscopic surgery more feasible. Performing laparoscopic surgery requires skilled hand-eye coordination and depth perception. Working in a two-dimensional vision system without stereoscopic depth perception can be challenging for the operator and can require substantial training and experience to overcome. Three-dimensional (3D) monitor displays may enhance laparoscopic skills by providing depth perception. The hypothesis of this study is that a standard definition stereoscopic, 3D display (Storz Endoscopy-America Inc.) will improve trainees’ performance on a standard Fundamentals of Laparoscopy Surgery (FLS) task.

**METHODS**

Thirty-two volunteers without any laparoscopic experience were recruited for the study. Subjects were provided with a video demonstration of the task and instructions on how to use the laparoscopic instruments. Practice was not permitted prior to the collection of data. Subjects were randomized to begin the trials on either the 3D or 2D display and performed 10 trials on a peg transfer task (SAGES). Subjects alternated between 3D and 2D displays for each trial. Time to completion of task, and the number of dropped objects during peg transfer were recorded for each trial. A subjective evaluation of the 3D system was obtained at the end of the data collection.

**RESULTS**

Mean time for peg transfer completion was significantly faster with the 3D monitor than the 2D monitor (114.22 s. versus 133.05 s.; SE: 3.82; P<0.0001). There was a significant difference in the number of dropped objects between subjects starting with 2D vs. 3D. Participants starting with 3D had significantly fewer dropped objects with 3D versus 2D (2.53 ± 0.87 objects dropped and 4.73 ± 0.97 objects respectively; p=0.034). Participants starting with 2D showed no significant difference in the number of dropped objects (3.65 ± 0.81 3D versus 3.77 ± 0.91 2D; p=0.88). Complaints related to the stereoscopic display monitor included teary eyes (18.75%), dizziness (12.5%), and subjective problems of focus (12.5%). Nevertheless 81.25% of subjects preferred the 3D display monitor over the 2D monitor.

**CONCLUSION**

The 3D stereoscopic monitor display significantly improves performance of laparoscopic surgery skills as measured by task completion time and number of dropped objects on a standardized FLS peg transfer task. Despite reports of complaints related to the stereoscopic imaging system, participants expressed a preference for the stereoscopic 3D monitor display.