

WORKLOAD DURING THE USE OF SINGLE PORT ACCESS LAPAROSCOPIC TROCARS

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Background

Laparoendoscopic Single Site surgery (LESS) has postoperative advantages for patients and optimizes health resources but it also has some problems for surgeons. Ergonomic issues during laparoscopy could be extrapolated to single port surgery although no significant studies have been published up to now. Furthermore, LESS has some technical difficulties concerning triangulation, instrumental parallelism and collisions. In this study, we propose an analysis of the workload after five weeks of training using three types of trocars.

Methods

A group of 24 surgeons performed intracorporeal cut and suturing tasks in physical simulator during five weeks. According to their experience level in minimally invasive approaches (10 novices, 10 intermediates and 4 experts), the group was divided. They used three commercially available single port access trocars which were chosen according to structure rigidity and flexibility and positioning of the cannulae: SILSTM Port, GelPOINT® and XCone®.

Subjects evaluated the perceptual (subjective) workload using questions with multidimensional rating scale of the National Aeronautics and Space Administration–Task Load Index (NASA-TLX) during the use of each trocar. NASA-TLX is widely regarded as the strongest tool available for reporting perceptions of workload.

Results

Improvements in workload during the use of each trocar between the first and fifth weeks were seen on novice and intermediate surgeons. Furthermore, workload of intermediate surgeons is lower than novice in both weeks. Regarding expert surgeons, workload during the first week is the lowest compared to novice and intermediate surgeons. But two of the three trocars show increased workload during the fifth week compared to the first week.

Conclusion

For each week and group, tasks performed with GelPOINT® are completed with the least workload and with the highest one when XCone® is used. It can be noticed that novice and intermediate surgeons improve workload results after five weeks of training. Expert surgeons show higher workload results in two of the three trocars because of extraordinary daily activity

during the fifth week, as expressed in the comments of the survey. Further results are needed to assess the workload of the surgeons and verify if they follow the trend observed in the other groups.