J-Pouch Length is a Significant Predictor of Performance on the Virtual Colorectal Surgical Trainer (VCoST) Ileal Pouch Anal Anastomosis Simulator

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Background

The Ileal Pouch Anal Anastomosis (IPAA) procedure is part of the Colorectal Objective Structured Assessment of Technical Skill (COSATS) tasks of the **American Board of Colon and Rectal Surgery (ABCRS).**

The complexity and learning curve of the IPAA procedure is well documented. Studies suggest that improved training leads to better outcomes, including a lower pouch failure rate. However, IPAA-specific simulators for training, assessment, and immediate feedback are currently unavailable.

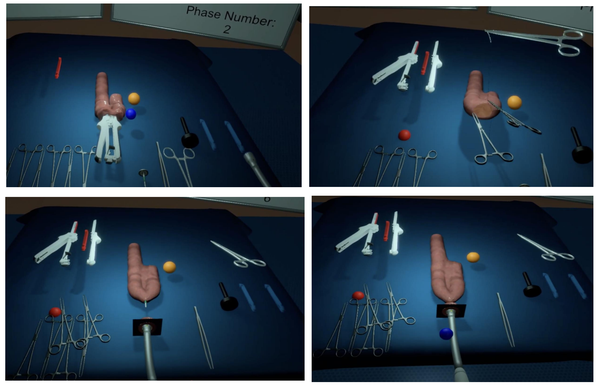
The **Virtual Colorectal Surgical Trainer (VCoST-IPAA)** was designed as an innovative platform for training and performance assessment for the IPAA procedure.

Objective

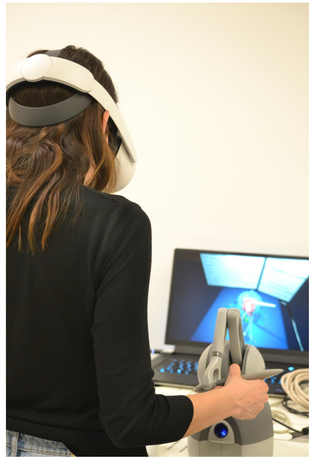
The aim of this study is to establish the discriminant validity of the Virtual Colorectal Surgical Trainer (VCoST-IPAA) for the IPAA procedure.

Methods

- General surgery residents from all academic years and expert colorectal surgeons from the University of Texas Southwestern Medical Center, were recruited to perform the IPAA procedure on the VCoST-IPAA simulator.
- 18 task-specific metrics previously created by expert consensus and task completion time were automatically recorded by the simulator.
- Subjects were divided into novice group (PGY 1-2) and expert group (PGY 3 – 5 who completed colorectal rotations and Faculty surgeons).
- The Mann-Whitney U test was used to assess the discriminant validity.



IPPA procedure on the VCOST Simulator



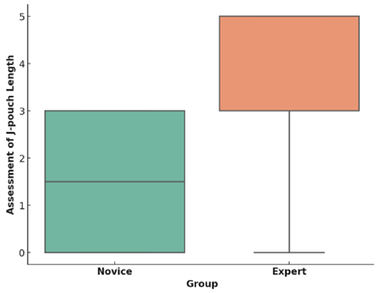
Subject with the VCOST Simulator

Results

A total of 20 subjects, equally distributed between the two groups, participated in the study.

Due to data corruption, only data from 9 subjects from the expert group were included in the analysis.

Mann-Whitney U Test results showed significant differences in performance between the two groups on the assessment of the length of the J-pouch (1.5 vs 5, W = 72.5, p = 0.01). No differences in completion time in minutes (771.5 vs 649, W = 24, p = 0.09) nor the total score computed using the 18 metrics (73 vs 76, W = 65, p = 0.1) between the two groups was found.



Performance between groups

Conclusion

Performance assessment on the VCoST-IPAA simulator revealed J-pouch length as a key predictor distinguishing novices from experts.

Prior experience with the validated VCoST straight coloanal anastomosis simulator may have positively influenced anastomosis performance.

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