

Learning Curve Associated with a New Automated Laparoscopic Suturing Device Compared to Laparoscopic Suturing

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Introduction

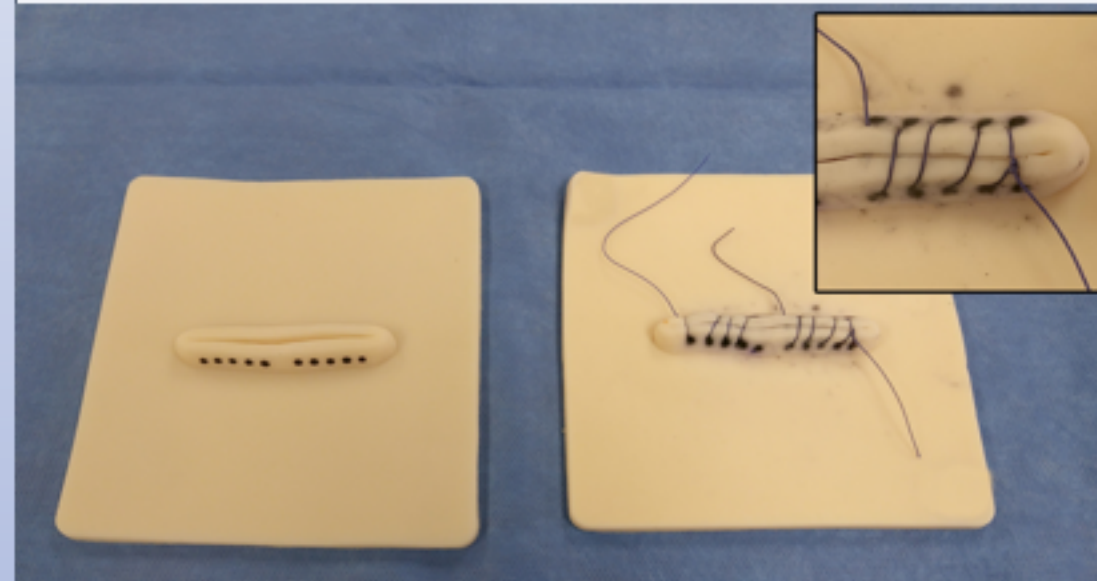
- Laparoscopy has shown to be beneficial in patient outcomes.
- The most complicated skill of laparoscopic cases is the surgeon's ability to suture.
- Performing intracorporeal suturing is difficult to perform with standard laparoscopic instruments.
- Several devices are on the market to aid in the ability to suture laparoscopically in an attempt to encourage surgeons to begin and complete laparoscopic surgical procedures.
- These devices do not mimic suturing in an open case, and have a learning curve of their own.

Methods

- Endo360™ is a laparoscopic suturing device that has a rotating needle at the tip of the instrument.
- The needle passes through an aperture that is perpendicular to the tissue target.
- 5 expert laparoscopic surgeons were used to develop proficiency standards for a particular task involving a square knot and running a suture.
 - Time to complete task
 - Accuracy of needle passes and knot integrity
- 19 residents were consented to participate in the study and divided into 2 groups and asked to perform the task.
 - Novice (PGY 1-2)
 - Advanced Beginner (PGY 3-5)
- Metrics used were:
 - Time and attempts to achieve the proficiency standard.
 - Accuracy of needle passes through gel matrix.



Materials



Resident Demographics	Group 1	Group 2
Number	12	7
Dominant hand		
Right	11	6
Left	1	1
Gender		
Male	8	5
Female	4	2
Used Lap Simulator before		
No	5	0
Yes	7	7
Median number of supervised Lap cases	62.5	300
Median number of independent Lap cases	0	125

Results

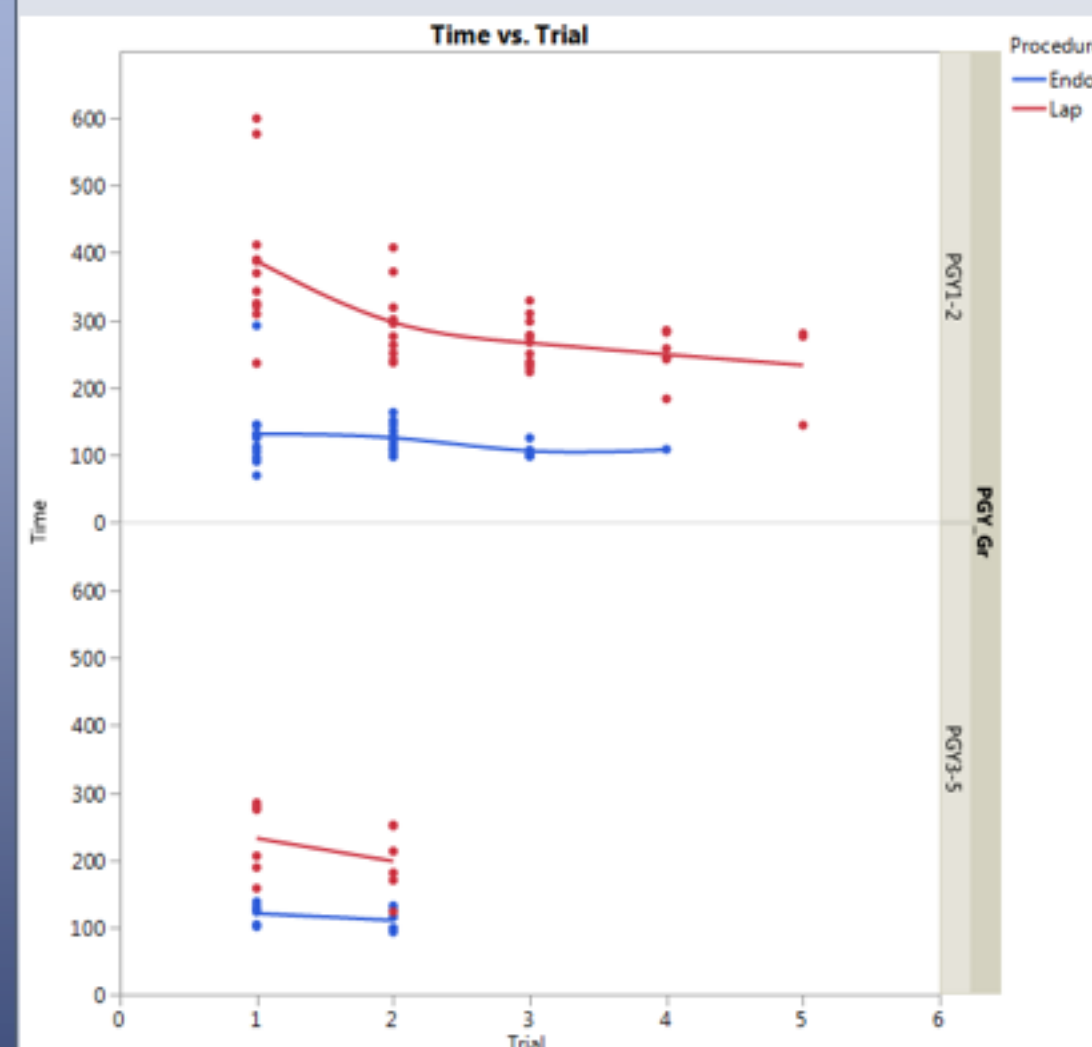


Figure 1. (Above) Novice group showing time needed to complete task and number of attempts to achieve proficiency standard. (Below) Advanced Beginner group showing the same endpoints.

Results (cont'd)

- Novice Group
 - Achieve expert proficiency to complete the same task in less time and number of attempts with Endo360™ than compared to traditional laparoscopic suturing.
- Advanced Beginner Group
 - Achieve expert proficiency in less time but the same amount of attempts with Endo360™ than compared to traditional laparoscopic suturing.

Conclusions

- Using Endo360™, residents NOT EXPERIENCED with laparoscopy
 - shorter learning curve to learn to knot tie.
 - The time to achieve the knot tying will be in shorter amount of time.
- Using Endo360™, residents EXPERIENCED with laparoscopy
 - Have the same learning curve to perform a new task with regard to attempts.
 - The time to do the task will be faster.
 - Introduction of a new device to perform the task does not make a difference with regard to time or attempts.
- Endo360™ has a short learning curve in comparison to learning to perform the same task with traditional laparoscopic suturing technique.