

MW16 Laparoscopic Suture Simulator -Assessment System-

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Laparoscopic Suture Simulator -Assessment System-

MW16 Laparoscopic Suture Simulator Assessment System



Objective assessment of intestinal tract suture and skin suture.
 Trainees' personal skills assessment data can be saved for reviewing and analysis.

Useful for training laparoscopic intestinal suture, Skin suture, and Handling of laparoscopic instruments training

Innovative assessment criteria and quantitative measurement provide objective feedback to trainers.

Life-like four-layer intestinal track

Assessment Criteria

*The criteria are based upon the cooperation by certified physician of Japan Society of Laparoscopic Surgery

Success

- 1 Is the wound sutured without leakage?
- 2 Is suture completed from muscular layer through mucosal layer?
- 3 Is ligature force appropriate for suture?
- 4 How much open area are there in the mucosal layer?
- 5 How long does it take for suturing procedure?

In order to assess Success or Failure, leakage test by checking the leaked air from the suturing area is carried out.

Life-like four-layer intestinal tract

Intestinal tract has four layers with respective characteristics. When holding with forceps and suturing, these four layers react like real tissue.



Prize

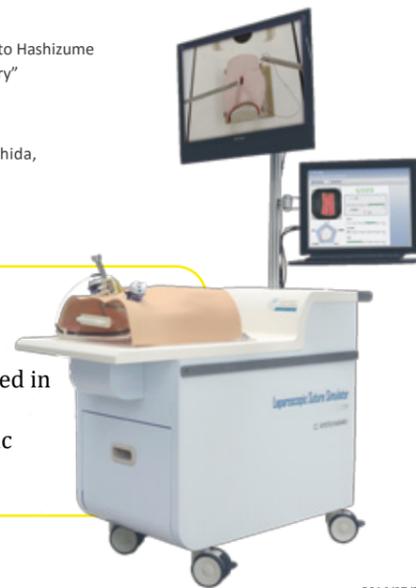
2nd Place Technology Innovation – IMSH2014
 Munenori Uemura, Makoto Yamashita, Morisasa Tomikawa, Satoshi Leiri, Noriyuki Matsuoka, Tomotsu Katayama and Makoto Hashizume
 "A New Objective Assessment System of Suture Ligature Method of the Intestinal Anastomosis Model for Laparoscopic Surgery"

Papers

Munenori Uemura, Makoto Yamashita, Morimasa Tomikawa, Satoshi Obata, Ryota Souzaki, Satoshi leiri, Kenoki Ohuchida, Noriyuki Matsuoka, Tamotsu Katayama, Makoto Hashizume
 "Objective assessment of the suture ligature method for the laparoscopic intestinal anastomosis model using a new computerized system" Surgical Endoscopy DOI 10.1007/s00464-014-3681-9

NEWS

MW16 Laparoscopic Suture Simulator Assessment System was officially adopted in suture and ligature session by Japan Society for Endoscopic Surgeon in 2016. The session is for medical doctors who seeks technical certificate as endoscopic surgery.



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MW16 Laparoscopic Suture Simulator Assessment System

Cycles of practice and assessment are the keys for improvement





MW16 Laparoscopic Suture Simulator Assessment System

Cycles of practice and assessment are the keys for improvement
-As part of Clinical Clerkship for 6th year students of medical school

Ten 6th year students of Kansai Medical University gathered in the simulation center. Dr. Inoue, associate professor told their students to start training. First, students experienced the laparoscopic senses of touch using dry boxes. After they became confident with their skills to some extent, the assessment using MW16 Simulator started.

Before the hands-on training, students took introductory courses about skin suture and the ways to handle forceps. The students learned a lot from the courses, so the hands-on training went on smoothly.

While training using the MW16 simulator, students commented;
"My score in suture tension was good, but the opening area was too large so there were too much leakage. I would like to try once more and modify the opening area"
"It took me much time to suture, but I could achieve three full-thickness suture! My score got better than last time"
Every time students get feedback from the MW16 simulator, they learned from it and their score improved.

This hands-on training indicated that even when there are lots of students attending in the class, effective training is possible. Motivation of some students got higher by getting assessment from the MW16 simulator.

"I would like students to learn no matter which clinical department to proceed, the important thing is to practice many times until reaching the goals" Dr. Inoue said

NOTE

Simulator used in this class

- MW16 Laparoscopic Suture Simulator Assessment System
- MCM-1 Dry box (End Work Pro II)

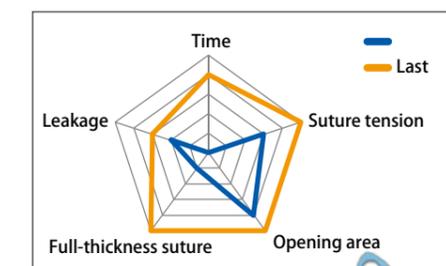
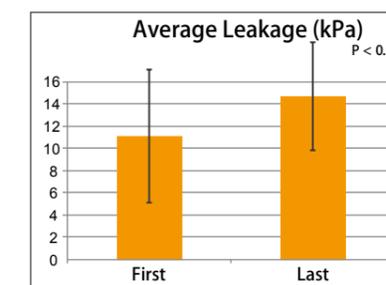
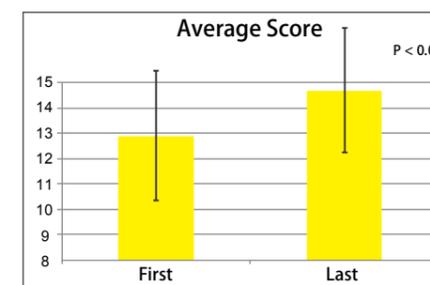


- ① Assessment using MW16 Simulator
- ② Visual check by Dr. Inoue
- ③ Dry box training
- ④ Training overview
- ⑤ Demonstration by Dr. Inoue

Data Analysis

- Numbers of training sessions: Four in total (May 25th, June 1st, June 22nd, June 29th)
- Students: 19 students (6th year of medical school), 2 residents
- Average number of assessment: 6 times
- Result: Significant difference were confirmed in air leakage (kPa) and total score (20 points for full score) of the first, and the last training session.

| Score | First | Final |
|--------------|-------|-------|
| Score | 12.9 | 14.7 |
| Leakage(kPa) | 11.1 | 14.7 |



Interview after using MW16 simulators for medical school students

Dr. Kentaro Inoue, Surgeon, Associate Professor of Kansai Medical University.
Certified physician of Japan Society for Endoscopic Surgeon.



In traditional laparoscopic training, the points that could be assessed were "time" and "liquid leakage when water is put into the intestinal tract". The MW16 simulator helps me teach students more effectively, and student's reaction to this course was great. Not only can physician pursue the "quality" of their procedures, but also they can set clear goal and get satisfaction after reaching it. The MW16 simulator also helps students advance to the learning from simply "seeing" the expert's procedure to the hands-on training which can help them understand the interesting and difficult point of laparoscopy. In short, the MW16 enhances multilateral learning.



Feedbacks from Students

At the end of the training, we made questionnaires to the participants of this session.

- My motivation got higher by receiving score from the MW16 simulator
- The sense of touch of MW16 simulator was much clearer than virtual reality simulators.
- I could recognize my weak points.
- It was fun to train with simulators which have objective assessment criteria.

COLUMN

After the laparoscopic suture training session. "Cut Paper" session started. Groups of two students prepared various kind of Origami.
Design pattern book and albums which past students made on the table. Using scissor forceps, students cut Origami and made geometric patterns.
Teamwork and role divisions are necessary to choose good designs in dry box. Students struggled but had fun.
We found out through the session that the teacher's creativity and ingenuity are important factors to help students learn effectively.



Student's work→

