**Urological Laparoscopic skill Training (ULST) proposed protocol:**

**Description**

In order to develop and demonstrate a required level of basic laparoscopic skills, urologist should participate in training courses to practice repeatedly. The goal is to learn the components of the laparoscopic

procedure and to demonstrate the ability to perform at a high skill level. Laparoscopy demands specific laparoscopic psychomotor skills for performing surgery in which three-dimensional vision and tactile feedback are missing.

Experience demonstrates that strictly defined training programs successfully assist the urologist in acquiring laparoscopic skills to a significant degree not only in a subjective view, but to a degree that is quantitatively provable. The quality of a course is obtained by means of a preset number of repetitions or by a defined proficiency level. In USA and many European countries, these preconditions are obligatory for the awarding of CME points. A strict time limit is also necessary. This present course meets these requirements.

The course was designed by Prof Dr Ahmed Hammady, secretary of laparoscope section EUA and it was inspired from the fundamentals of laparoscopic surgery (FLS), developed by SAGES in 2004, in addition to the laparoscopic course recognized by the Swiss Society of Surgery.

**Objectives**

♦ In order to perfect basic laparoscopic skills, repetition based training is mandatory. The following skills are practiced: Manipulation of the laparoscopic lens with 0º/30º visual angle (see and allow the surgeon to see); Orientation in the laparoscopic environment; eye-hand psychomotor coordination; Depth perception in a 2-dimensional field; Bi-manual handling - manipulation of laparoscopic instruments; principles of safe clipping.

♦ To gain the necessary knowledge of the laparoscopic procedures by performing a four levels consisting of theoretical (2hours for each level) and hands-on-training curriculum:

Level 1- beginner: simple skills (synthetic models)

Level 2- intermediate/lower: complex skills (organic models) + laparoscopic instruments and equipment knowledge

Level 3- intermediate/upper: complete simple procedure in animal lab

Level 4- advanced: complete complex procedure in animal lab

♦ Skills evaluation include: Reaching a good average time and accuracy to perform tasks; passing each level is required for moving to the consecutive one.

**Specialties**

Urology

**Target Audience**

* Urologist in training
* Junior urologist who just graduated and developing their career
* Senior urologists who seek for updates in their fields

**Assumptions**

No previous procedural or technical knowledge is required.

**Suggested Time Length**

Course participants are required to complete the course within a time frame of one year.

**Author**

Prof Dr Ahmed R. Hammady

Professor of Urology and minimal invasive surgery

Sohag university, Egypt

Secretary of laparoscopy section EUA

**Introduction to Course (level 1: Beginner–**

**Instructors**

**Instructor Team - Checklist**

♦ The instructor should have complete knowledge regarding laparoscopic surgery and previously used the simulator himself/herself during his/her learning curve

should be positively convinced of the simulation technology benefits, and be able to motivate his/her team to train.

♦ Should be a person who knows and has mastered the various modules of the simulator.

* Should explain the instruments ergonomics and the rules of each task at the beginning of the session

♦ Should be capable of solving logistic and technical problems and is responsible for the simulator and should have the time to do so.

♦ Should be able to guide trainees to optimally perform the exercises.

♦ Able to adjust the design of the training individually to suit the abilities of the trainee.

♦ Should be available for at least one hour before training, to help avoid startup difficulties.

♦ Regularly checks whether everything is going well with the trainee.

* Engage the trainees in a time race to the finish the task as time pressure can motivate them to concentrate

**Data Analysis and Evaluation**

After completion of the training, the data is analyzed and evaluated by an expert on the basis of experience- based values. The evaluation is presented to the participant and discussed.

The course is only valid after the trainee reaches a certain proficiency level for the basic skills and procedural tasks.

**Basic Skills and Procedural Tasks**

In general, the following aspects are taken into account:

♦ The exercise is performed with 100% accuracy rate.

♦ The exercise is safely performed

♦ The exercise has to be done within the time limits.

**Task Descriptions and Training Curriculum Steps**

The trainee is required to follow a structured step by step pathway defined in a hierarchical order in the following manner:

**1. introduction to Training**

**instructions:**

The participants should receive a complete course description and some supplementary information. Participants will become familiar with the course tasks by one-on-one instructions given by a specially trained instructor. Participants will receive precise information about the various training programs they will have to complete and the goals they will have to reach. Each trainee should practice each of the five tasks in order.

If the trainee cannot achieve the acquired level of proficiency in 10 repetitions, the trainee should proceed to the next task and re-evaluated after completing the other tasks.

**2. Basic Skills and Procedural Tasks - independent Training (12 trainees at maximum for**

Participants will have access to the simulator, enabling them to train independently at will. During these training sessions, an instructor will be available to answer questions, if requested. Simulator tasks results will be examined by the instructor. The duration of the session not more than 50 minutes for training and 20 minutes for timed examination and evaluation

**Basic Skills Task 1 - Camera Manipulation**

**Task Description:**

Locating 9 different small objects on numbered chess like board using 0° then 30°

**Time:** 10 min per participant/ 1.5 min for each lens to pass

**Basic Skills Task 2 - Translocation of Objects**

**Task Description:**

Manipulate colored circular object with two graspers and, place the object into a matched colored short rope fixed to the board

**Time:** 10 min per participant/ 2 min to pass

**Basic Skills Task 3 – Cutting a dual concentric circles on a Gauze**

**Task description:**

Safely grasp and cut the first layer between the 2 concentric lines without cutting through the lines then the same for the second layer (precision cutting, traction, instrument tip rotation skills)

**Time:** 10 min per participant/2.3 min to pass

**Basic Skills Task 4- Needle driving loop**

**Task description:**

Driving the needle through 9 rings arranged in S-shape with suggestive suture length about 15-20 cm using 2 needle drivers starting with the right one then change holding the needle to the left one following the arrows drawn on the board.

**Time:** 10 min per participant/6 min to pass

**Basic skills task 5- Intracorporeal knot tying**

**Task description**

Performing a single knot with one double-throw and two single-throws on a soft rubber short tube. The stitch has to completely close the hole on the tube, which is provided with two black dots (one on each side of it). While suturing, the needle (and, therefore, the suture) has to pass through the two black dots.

**Time:** 10 min per participant/4.8 min to pass

**3- Theoretical presentation of the beginner course:**

For this level, basic informative lectures (2 hours) as an integral part of the course explaining the basics of laparoscopic surgery and laparoscopic instrumentation. Those lecture should include the following subjects:

1. Anatomy of the anterior wall and laparoscopic approach
2. Laparoscopic instrumentation and equipment
3. Laparoscopic access (transperitoneal and retroperitoneal)
4. Pneumoperitoneum (physiologic and hemodynamic effects
5. Complications of laparoscopic surgery.
6. ULST presentation including goal and objectives with demonstrating all tasks of training course and how to do it the right way

**4- Evaluation of the training course effectiveness:**

* Was training delivered as planned, on time and to the appointed audience?
* Which training methods worked with which topics and which audience groups?
* Which methods did not with which topics or audiences?
* What specific problems occurred?
* How effective was the trainer at engaging the audience and conveying information?
* Did the training satisfy regulatory and legal requirements?
* Were all stated goals reached? If not, why not?

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