

Laparoscopy in Gynecology

- **Course title, description**

Basic hands on gynecologic laparoscopy training

Rationale

Laparoscopy has emerged as the most widely used endoscopic procedure in gynecological cases both for diagnostic as well operative purposes and its indications are ever increasing.

Diagnostic laparoscopy is a valuable tool for diagnosis of many gynecologic conditions, especially, infertility and chronic pelvic pain. Laparoscopic surgery has been associated with less minor complications and shorter duration of hospital stay when compared to open surgery. It has therefore replaced open surgery for many interventions over the years in developed countries. Due to the lack of training and equipment, this is rarely the case in resource-constrained countries. However, the use of laparoscopy could have implications in reducing the financial burden on the often overstretched health care systems in these regions while at the same time improving the well-being of patients. Laparoscopic surgery continues to expand its horizons and embrace new technology. Much has changed from the era of only diagnostic and sterilization procedures. Advanced laparoscopic surgery uses special techniques, some new and similar to others ones traditional to perform a growing range of procedures. Before embarking on such procedures, each surgeon should develop a safe technique, especially for the basic skills.

Laparoscopic surgery has been introduced since the seventies in Egypt. Since then, it has witnessed many advances. It has also increasing indications for diagnosis and management of many gynecological problems.

Performing laparoscopy entails a thorough knowledge of instruments (especially energy sources) and anatomy that pertains to laparoscopy. For optimum results, preoperative preparation is a must including history, examination and sometimes investigations to choose the proper candidate for the procedure and optimize safety. Postoperative care is also essential with its special considerations.

Laparoscopy (especially surgical laparoscopy) entails the use of very complex psychomotor skills. Skill acquisition, not to say competency, require repeated practice and feedback. Although many principles of open surgery may apply, performing laparoscopic procedures requires special skills

The Royal College of Obstetricians and Gynecologists working party suggested four levels of laparoscopic procedures. The levels are listed below.

Level 1: Diagnostic Laparoscopy

Level 2: Minor procedures

Sterilization

needle aspiration of small cysts

ovarian biopsy

adhesiolysis not involving bowel

ventro-suspension

coagulation of endometriosis, AFS stage I

Level 3: More Extensive Procedures

- Laser/coagulation of polycystic ovaries
- Laser/coagulation of endometriosis AFS stage II or III
- Utero-sacral nerve ablation
- Salpingostomy
- Salpingectomy, salpingo-oophorectomy
- Moderate to severe adhesiolysis
- Bowel adhesiolysis
- Ovarian cystectomy
- Laser management of endometrioma
- Assisted vaginal hysterectomy without associated pathology

Level 4: Advanced Laparoscopy

- Myomectomy
- Endometriosis AFS stage III and IV
- Pelvic lymphadenectomy
- Pelvic side wall/ureteric dissection
- Pre-sacral neurectomy
- Dissection of obliterated pouch of Douglas
- Incontinence reconstruction

Course goal (s)

The goal of the of this course is to prepare participants to competently perform diagnostic laparoscopy independently and be able to perform level 2 operative laparoscopy procedures (except ventrosuspension) under supervision.

Participant learning objectives

By the end of this course, participants should be able to:

1. Correctly identify the instruments used in laparoscopy
2. Differentiate unipolar/bipolar energy sources

3. Describe the dynamic anatomy of the abdominal wall and female abdomen/pelvis
4. List the indications, contraindications and complications of laparoscopy
5. List the relevant history taking, physical examination and investigations needed for preoperative preparation of a patient for laparoscopy
6. list the essential steps of postoperative care and management of minor postoperative complaints
7. Properly write a laparoscopy report
8. Check the instruments before starting the procedure
9. Perform diagnostic laparoscopy
10. Perform Tubal Sterilization
11. needle aspiration of small ovarian cysts
12. laparoscopic ovarian drilling for PCOS
13. ovarian biopsy
14. adhesiolysis not involving bowel
15. coagulation of endometriosis, AFS stage I

Course prerequisites

Resident / assistant lecturer/specialist in obstetrics& gynecology.

At least one year of experience in gynecologic practice

Course logistics (e.g., location, length and dates of course)

Location

Didactic part will be given in the lecture room in Assiut Medical School Education development center (AMEDC), main faculty building, 5th floor, Corridor B.

Orientation about instruments and simulated practice will take place at the skill I in Assiut University Center for Endoscopic Surgery Training (AUCEST), main faculty building, 5th floor, Corridor B.

Training on live patients will take place at the Endoscopy Unit, Women's Health Center, 4th floor.

Length

The didactic sessions will take one day

Orientation about the instruments and simulated practice for one day

Live training will take three days

Description of teaching/training methods to be used

The didactic part will be in the form of interactive presentations with case studies.

The practical part will consist of

Demonstration of instruments

Training on performing laparoscopy on simulators (pelvic trainers and abdominal wall entry trainers)

Description or list of instructional materials to be used

- **Didactic:** powerpoint presentations, lecture handouts
 - **Practical skills:** videotapes, CDs, pelvitrainers, learning guides
 - **Live training:** live demonstration and supervised performance of procedures according to the learning guide
- Description of assignments in summary form

Prior reading of the steps of the procedures that will be performed live is required. The candidate will be formatively assessed before embarking on the procedure. The source is "Textbook of Laparoscopy" by Hulka Y, available at the bookshop.

Learner assessment

Knowledge is measured using a pretest/posttest that is in the form of MCQ, true/false, matching and short answer questions

Formative assessment of knowledge about the procedures will be done in the theatre before embarking on the procedure.

Skills will be assessed by direct observation of participant performance using a checklist

Participant attendance criteria

Participants are required to attend all the didactic sessions and simulated practice before being allowed to attend the live training.

A system of procedure-specific certification system will be granted to participants:

Basic Laparoscopy Courses For postgraduates

History and evolution

- Laparoscopic surgery has been practiced over 80 years.
- Laparoscopic surgery continues to expand its horizons and embrace new technology
- Hippocrates 460-375 BC rectoscope
- Bozzini 1806 urethroscope then cystoscope
- Peritoneoscopy -celioscopy
- Palmer in 1954

Steps of basic diagnostic laparoscopy

Operating Room(Generous-Arranged-)Equipped

Operating table(Narrow-Allen strirrup -Arms-Trendelenburg)

Indication and contraindication

Position and preparation

Team

Basic instruments

Optics = vision

Anesthesia

Pneumoperitoneum

Laparoscope insertion

Inspection

Closure

Postoperative care

Complications

Reporting

Indication for diagnostic laparoscopy

1. Infertility. This is one of the most common indications for diagnostic laparoscopy.

Structural abnormalities of the uterus, including congenital developmental abnormalities (such as a bicornuate or unicornuate uterus), and fibroids.

Endometriosis

Fallopian tube occlusion. A diagnostic laparoscopy may clarify the diagnosis and treatment prior to reconstructive surgery.

2. Chronic pelvic pain.

3. Chronic Pelvic Inflammatory Disease (PID)

4. Pelvic mass.

Indications for an urgent diagnostic laparoscopy

1. Acute Pelvic Inflammatory Disease.

2. Ectopic Pregnancy.

3. Torsion of a tube or ovary..

Contra-indications to laparoscopy

a-Absolute contraindications

- 1.** A large abdominal mass such as a fibroid or ovarian cyst
- 2.** An irreducible external hernia. A laparoscopy in this situation could enlarge the hernia sac and make the condition worse.
- 3.** Hypovolemic shock.

4. Medical problems such as cardio-respiratory failure, obstructive airway disease, or a recent myocardial infarction.
5. An inexperienced surgeon or a lack of proper equipment.

B-Relative contraindications

1. Multiple prior abdominal incisions
2. Morbid obesity.
3. Local skin infections may require that the locations for the abdominal incisions be altered.
4. Generalized peritonitis
5. Intestinal obstruction or ileus. This is a relative contra-indication because of the increased risk of bowel perforation upon entry of the Veress" needle or trocars.
6. Coincidental medical conditions such as ischemic heart disease, blood dyscrasias or coagulopathies.

Position and preparation

• Position

Lithotomy position

Horizontal

Uterine manipulator and canula (chromotubation)

Empty bladder

- Preparation
Abdomen, vagina and perineum cleansed and draped
- Shaving
- EUA(Examination Under Anesthesia)

Team

Surgeon

Assistant

Scrub nurse

Circulating nurse

Anesthesiologist

Basic instruments

Operating room, table and team

Video monitor

Video camera

Light source and cable

Veress needle

Insufflator

Trocar and canula

Laparoscope(10mm or 5mm)

Uterine manipulator.

Laparoscopic scissors.

·Atraumatic grasping forceps.

Smooth forceps designed for grasping the tubes.

Bipolar electrocoagulator.

Optics = vision

- Video monitor
- Video camera
- Fiber optic cable
- Light source (Halogen or Xenon)
- Telescope (laparoscope)

WHAT TYPE OF ANESTHESIA IS USED?

Local

General

General anesthesia is preferred for laparoscopy as it provides adequate muscle relaxation and assisted respiration

Pneumoperitonum

(instillation of gas into the peritoneal cavity)

Abdominal entry is the most dangerous part of laparoscopic procedures

Verress needle (not Verres)

infra umbilical(intra umbilical)

spring mechanism

Inner &outer sleeve

short and long

Verress needle insertion

- *Towards uterus (forgives)*
- *Away from vessels (do not forgives)*
- *angle 45*

Abdominal entry alternatives

- *Open laparoscopy(Hasson)*
- *Direct trocar insertin*
- *Towel clip elevator*
- *No elevation z technique*

Gases

-
-
- § *Room air*
- § *CO2 (carbonic acid pain)*
- § *NO inert*
- § *Gasless laparoscopy*

Steps of Pneumoperitonum

1. *Step 1: Elevating the Anterior Abdominal Wall*
2. *Step 2: The Incision*
3. *Step 3: Inserting the Veress Needle*
4. *Step 4: Initiating the Insufflation*

Tests to confirm the proper position of the Veress needle.

- *Hanging drop test.*
- *Injection and aspiration of fluid through the Veress needle **
- *An unimpeded arc of rotation of the needle to detect anterior abdominal w adhesions*
- *loss of liver dullness early in insufflation**
- *Sound of air entering Veress needle with elevation of the abdominal wal*
- *Free flow of gas through the Veress needle*
- *Observation of the fluctuation of pressure gauge needle with inspiratory ar expiratory diaphragmatic motions*

Laparoflator

- *Should start by low rate*
- *IAP should not exceed 20 mmHg*
- *Monitor*
- *Intrabdominal pressure mmHG*
- *Gas flow L/m*
- *Gas amount liver dullness*

TROCAR INSERTION

Successful insertion of the trocar depends on:

*An adequate skin incision,
an instrument in good working condition
Proper orientation of the trocar
appropriate insertion force*

Control over depth of insertion of the instrument

What is laparoscope

A laparoscope is a telescope designed for medical use. It is connected to a high intensity light and a high resolution television camera so that the surgeon can see what is inside of patients. The laparoscope is put into the abdominal cavity through a hollow tube (trocar) and the image of inside of abdomen is seen on the television screen.

1. Size 10mm or 5mm
Angle-- zero (HEAD ON), 30, 45, 70.

Inspection

Upper abdomen

Uterus, tubes and ovaries

Uterosacral ligaments

Pelvic peritoneum

Chromotubatin

Operative laparoscopy

1. Infertility - *PCOS*
- *Tubal factor*—Lysis of adhesion

Pelvic pain *LUNA*

Endometriosis-- *Fulguration*

Tubal pregnancy

Ovarian surgery

Myomectomy

Hysterectomy

Lymphadenectomy

Tubal sterilization

Others

SUCTION IRRIGATION

- *The solution for pollution is dilution.*
- *E U W*
- *DISSECTION*

Cleaning and sterilization of instruments

- *cold water*
- *Soap*
- *Brush*
- *Cidex(20-30m)*
- *Formalin*

Postoperative care and complications

The anaesthetic

The induction of pneumoperitoneum

Insertion of primary and secondary trocars

Thermal Instruments

Mechanical Instruments

Other associated conditions