

## *Endoscopic plastic & micro surgery*

### **Rational:**

Plastic surgery has only recently begun to adopt the minimally invasive surgical procedures using the endoscopic techniques. However it has expanded rapidly with applications across the broad range of plastic surgery interferences.

To keep the pace with the advanced endoscopic surgeries, surgeons should develop this new technique especially for the basic skills as a step. These basic skills should be mastered by the widest possible base of orthopedic surgeons.

The indications of using the endoscope in the field of plastic surgery may include: facial surgeries, breast surgeries, abdominoplasty, tissue expansion, carpal tunnel release, free tissue harvesting, and microsurgery.

### *Targeted Groups:*

*Both under and post-graduates are targeted for developing the needed knowledge for endoscopic plastic surgeries.*

### *Goals:*

- *Presenting the basic academic knowledge of endoscopic plastic surgeries for the undergraduates.*
- *Presenting informative academic knowledge and basic experimental and clinical training of endoscopic plastic surgeries for the postgraduates. Mastering the endoscopic skills for performing the necessary operative plastic surgery interferences should follow these basic and advanced course and workshops.*

### *Course goal (s):*

*The Plastic Surgery activities in AUCEST is aiming to present the postgraduate participants with enough academic and clinical da*

*through theoretical and hands-on-workshops in all plastic surge aspects in which the endoscope can be applied.*

*This may include:*

- Endoscopic facial surgeries
- Endoscopic breast surgeries
- Endoscopic tissue expansion
- Endoscopic free tissue harvesting
- Endoscopic assisted microsurgery

*Learning objectives*

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

1. *Know the important milestones in the history of medical endoscopy.*
2. *Give an overview about endoscopy in plastic surgery.*
3. *List the indications, procedures, contraindications, and complications of endoscopic plastic surgery.*
4. *List the instruments and imaging equipments needed in this field.*
5. *Know the basics of sterilization, cleaning, and packing of the instruments.*
6. *Know the basics of the uses and adjustments of the imaging equipments.*

*Course prerequisites:*

*Postgraduate medical students including residents, assistant lecturers, and specialists. The candidates should have at least two years of plastic surgery training.*

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

*Location:*

- *Didactic part will be given in the lecture room in Assiut Medical School Educational development center (AMEDC), main faculty building, and 5th floor, Corridor B.*
- *Orientation about instruments will take place at the skill lab in Assiut University Center for Endoscopic Surgery Training (AUCEST), main faculty building, 5<sup>th</sup> floor, Corridor B.*
- *Attending simulated and experimental live surgery workshops.*
- *Attending live procedures will take place in the respective endoscopic centers in Assiut University Hospital.*

*Time Frame*

- *The didactic sessions will take 9 hour divided in the three days course duration.*
- *Orientation about the instruments and simulated practice for 2 hours in the first day.*
- *Simulated and experimental live surgery workshops will take 12 hour divided in two days.*
- *Live training in the plastic surgery department of Assiut University Hospital for 8 hours in the last day of the course.*

*Instructional materials:*

- *Didactic: PowerPoint presentations, lecture handouts*
- *Practical skills: videotapes, CDs, endoscopic instruments, laparoscopic abdominal simulator.*
- *Experimental training. Animals*
- *Live training. Clinical applications.*

*Teaching and training methods:*

- *The didactic part will be in the form of interactive presentations. The discussed topics should include all current aspects of endoscopic plastic surgery as:*
  1. *Facial surgeries:*
    2. *Facial endoscopic surgeries were the first ones to be applied mainly for face-lifting especially for the forehead and brow area to elevate the eye brows and reduce forehead wrinkling.*
  1. *Breast Surgeries:*
    2. *They are mainly applied for breast augmentation through the hidden axillary incision instead of the visible intra-areolar or infra-mammary incisions.*
  1. *Abdominoplasty: Through the endoscope, the surgeon can repair a divergence of the recti muscles through few limited incisions instead of the conventional long supra-pubic incision.*
  1. *Tissue expansion: The endoscope can present the opportunity of a limited incision plus working away from the field to be expanded to avoid the extrusion complication.*
  1. *Carpal tunnel release: The endoscopic approach for this syndrome can provide an incision away from the palm area with shortening of the postoperative recovery.*
  1. *Tissue harvesting:*
    2. *There are increasing reports nowadays about the laparoscopic harvesting of omentum and jejunum through limited incisions. Moreover, the sural nerve, and some muscles like LD, RA muscles can be harvested via the endoscope with limited incisions and less morbidity.*

1. *Microsurgery:*

2. *For microsurgical performance, the surgeon just needs to see the field magnified with a good degree of resolution. The recent explosion in digital technology made the performance of the complex surgical procedures with the guidance of video-imaging a well established concept. A combination of digital imaging and microsurgery seems to be an inevitable result of progress in both these areas. Moreover, the endoscopic techniques provide both magnification and the ability to operate at a distance and to include all the team members in the act.*

1. *The scope could be mounted above the operative field with the image display on a high resolution colored monitor set up in front of the surgeon to perform microsurgery.*

• *The practical part will consist of:*

1. *Demonstration of instruments including forceps, needle holders, coagulators, suction cannulas, elevators, scissors, and others*

2. *Display the function and mechanism of action of the different equipments including camera system, light source, monitor, and documentation sets.*

3. *Laparoscopic abdominal simulator to gain the depth perception and the eye-to-hand coordination.*

• *Experimental training animal models:*

1. *Through the down mentioned application the candidate should know the basic knowledge about animal anesthesia, positioning, and handling, and get the needed clinic sense of instrumental handling and dealing.*

1. *Pigs for tissue harvesting such as latissimus dorsi, rectus abdominis, and gracilis muscle harvesting. In this part of training the candidate should be firstly guided by the instructors in the first session, then he should be able in later sessions to endoscopically dissect each of these muscle from its both sides anterior and posterior with dealing of the vascular perforators by clipping or coagulation. Moreover, he should to be able to dissect the critical area of the neuro-vascular bundle of these muscles to complete harvesting of the muscle.*

1. *Pigs for creating pockets for implanting tissue expanders and breast implants. In this part of training the applicant should be able to dissect a subcutaneous plane, cauterize vessels and create a pocket which should be then followed by implant a tissue expander or an empty, saline filled or gel filled breast implants.*

1. *Sprague Dawley rats for endoscopic assisted microvascular anastomoses on the rat femoral vessels. In this part of training the applicant should be able to dissect the femoral vessels including the artery, vein, and nerve from the surrounding tissue and from each other, followed by transecting them, applying microvascular clamps, and performing the suture anastomoses.*

- *Live training*

*Live demonstration of procedures according to the learning guide. Breast augmentation, forehead lifting and endoscopic assisted microsurgery are the main clinical training topics as they are the most widely used application nowadays. In these applications, the candidate should be able to get the needed information about patient selection, measurements, choosing the suitable implants and instruments. Selecting the type of anesthesia, patient positioning, endoscopic tower position and operative team personnel and its position are preparatory targeted objectives. Post-operative follow up, patient discharge criteria, and expected complications are the clinical targeted objectives.*

Assignments:

*Prior reading of the steps of the procedures that will be performed live is required.*

*Attendance criteria:*

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

Learner assessment:

- 1. Formative assessment of knowledge about the procedures will be done in the theatre before embarking on the procedure.*
- 2. Skills will be assessed by direct observation of participant performance using a checklist*