LAP Mentor / GI-BRONCH Mentor

Loyola University General Surgery Simulation Skills Curricula 2014-2015

Description

The important role of simulation training in the education of surgical residents has been well documented. With restriction in duty hours and continual advancement in new surgical technologies, adjunct modalities for surgical education have become essential in surgical education. We have compiled a curriculum encompassing laparoscopic, endoscopic simulation trainers.

Objectives

- To gain exposure and proficiency in laparoscopic and endoscopic techniques.
- To practice standard laparoscopic and endoscopic procedures.
- To provide a method of self-evaluation for the surgical resident.
- To confirm necessary laparoscopic and endoscopic skills prior to proceeding with formal surgical procedures.

Specialties

General Surgery

Target Audience

General Surgery Residents, clinical years 1-5

Assumptions

Trainees are active surgical residents in the General Surgery discipline, contextually familiar with laparoscopy and endoscopic procedures. No prior skills are required.

Suggested Time Length

Trainees will be given monthly modules assignments for the laparoscopic and endoscopic, simulators to be completed independently. Simulator reports will be collected and trainee progress recorded.

Authors

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August

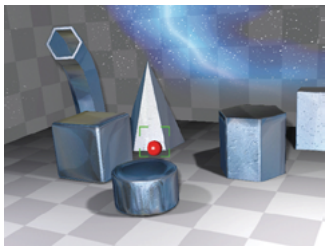
PGY 1-2:

LAP Mentor Hands-On: Basic Skills Tasks 1-9

9 laparoscopic basic tasks.Enables the trainee to acquire basic-level skills essential to building confidence and ease with laparoscopic techniques. Exercises in a non-anatomic setting provide a relaxed environment outside of the operating room for both individuals and teams, aimed at improving orientation, eye hand coordination and manual skills.

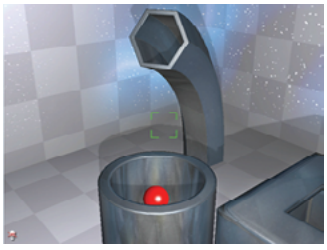
Objectives

- To become familiarized with straight and angled camera manipulation.
- To master eye-hand coordination.To practice clip applying.
- To practice two handed maneuvers.To perform laparoscopic cutting.
- To acquire the skill to perform safe and accurate electrocautery.
- To become efficient at the task of translocating of objects.



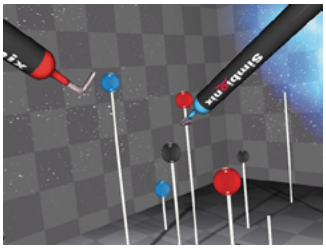
Task 1 - Camera Manipulation 0°

Task Description
Using a 0° camera, locate and snap photographs of ten balls, in an abstract environment.



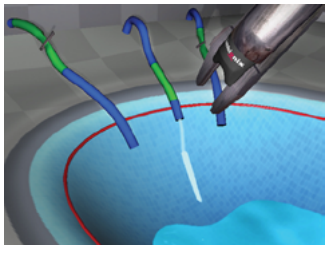
Task 2 - Camera Manipulation 30º

Task Description
Use the 30º angled camera to locate each of the 10 balls and take their photos.



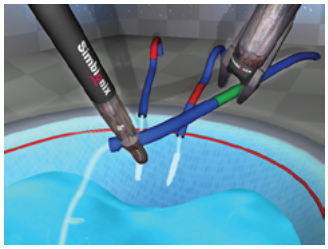
Task 3 - Eye-Hand Coordination

Task Description
Locate each flashing ball and touch it with the tool of the appropriate color.



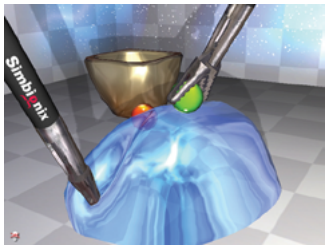
Task 4 - Clip Applying

Task Description
In this task you are required to clip leaking ducts. Complete the task before the water level reaches the red line.



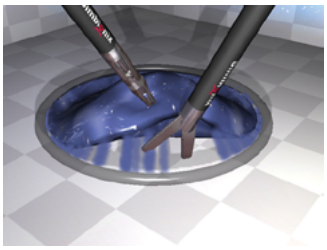
Task 5 - Clipping and Grasping

Task Description
Safely grasp and clip leaking ducts within a specified segment, before the pool fills.



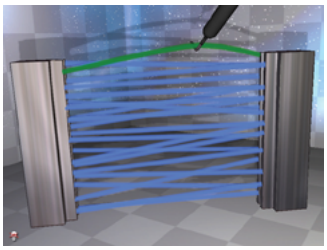
Task 6 - Two-Handed Maneuvers

Task Description
Use two graspers to locate the balls within the jelly mass and then place them in the endobag.



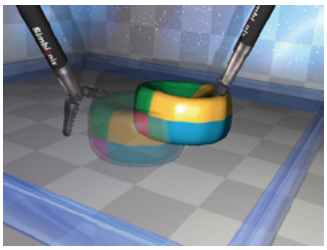
Task 7 - Cutting

Task Description
Safely cut and separate a circular form using one tool to retract, and the scissors to cut accurately.



Task 8 – Electrosurgery

Task Description
Use a hook to burn the highlighted band, while retracting other bands with an accessory instrument.



Task 9 - Translocation of Objects

Task Description
Use a minimum number of hand to hand passes to place the object exactly into the transparent object matching the same color sides.

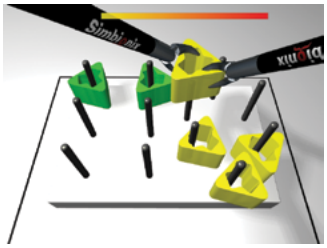
PGY 3-5:

LAP Mentor Hands-On: Essential Tasks 1-4

3 essential laparoscopic tasks. Provides practice on tasks including peg transfer, pattern cutting and placement of ligating loop, similar to the Fundamentals of Laparoscopic Surgery Program (FLS) developed by SAGES. The module enables implementing a training curriculum for the tasks, while heavily relying on self practice and optimizing proctor time. Breakthrough virtual reality technology provides an efficient and enjoyable environment to practice the tasks repetitively and independently until reaching the desired proficiency level.

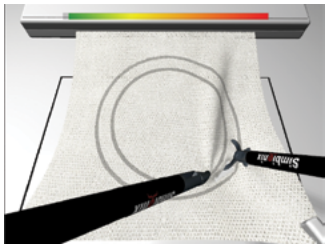
Objectives

- To become accustomed to the fulcrum effect, laparoscopic depth perception and eye hand coordination.
- To practice coordinated hand movements.
- To accurately and efficiently grasp objects and transfer them to designated areas.
- To train on use of laparoscopic scissors for cutting.
- To become familiarized with the method of placing a ligating loop.



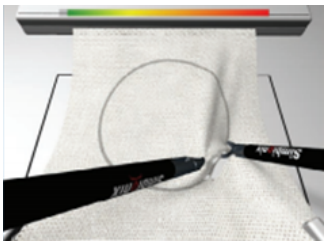
Essential Skills Task 1 – Peg Transfer

Task Description
Lift objects from the pegboard with one hand, transfer to the other hand and place them over the pegs on the other pegboard. Then reverse the procedure.



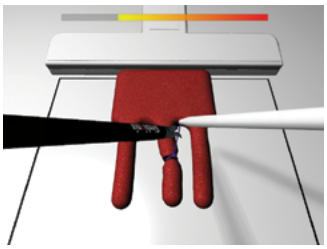
Essential Skills Task 2 - Pattern Cutting (Training Gauze)

Task Description
Cut out a circle from a square piece of gauze suspended between clips.



Essential Skills Task 3 - Pattern Cutting (Test Gauze)

Task Description
Cut out a circle from a square piece of gauze suspended between clips.



Essential Skills Task 4 – Placement of Ligating Loop

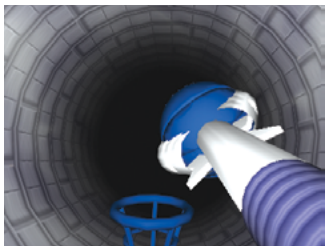
Task Description
Place the ligating loop around a foam appendage on the provided mark as accurately as possible.

All PGY:

GI Mentor Hands-On: Cyberscopy, 4 cases

Endobasket case 1-2

Endobubble case1-2

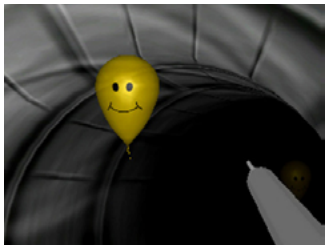


Endobasket Case 1 - 2

Case Description
2 skill tasks with an increasing level of complexity. This module supports acquiring and improving scope maneuvering skills and hand-eye coordination in a non-clinical environment.

Objectives

- To enhance hand-eye coordination
- To gain confidence in controlling and maneuvering the endoscope



Endobubble Case 1-2

Case Description
2 skill tasks with an increasing level of complexity. This module supports acquiring and improving scope maneuvering skills and hand-eye coordination in a non-clinical environment.

Objectives

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- To gain confidence in controlling and maneuvering the endoscope

September

PGY 1-2:

LAP Mentor Hands-On - Essential Tasks 1-4

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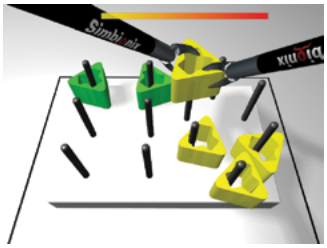

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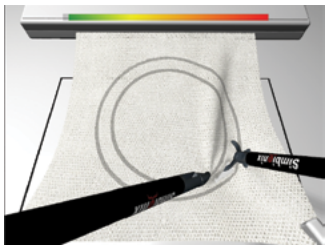
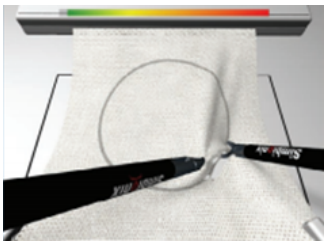


Essential Skills Task 2 - Pattern Cutting (Training Gauze)

Task Description
Cut out a circle from a square piece of gauze suspended between clips.



Essential Skills Task 3 - Pattern Cutting (Test Gauze)

Task Description
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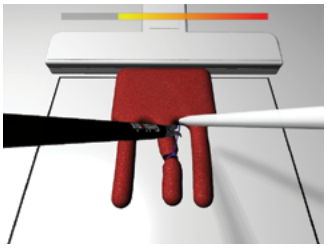


Essential Skills Task 4 – Placement of Ligating Loop

Task Description
Place the ligating loop around a foam appendage on the provided mark as accurately as possible.

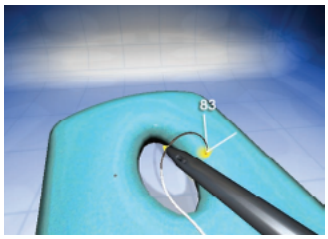
PGY 3-5:

LAP Mentor Hands-On - Suturing 1-6

6 tasks for practicing the basic suturing skills.The Basic Suturing Module is a unique and realistic module designed to train until proficient at basic suturing techniques for all fields of laparoscopic surgery: All tasks are illustrated by instructional videos that greatly enhance the training process. Real suturing handles enable realistic training of needle loading, needle insertion, knot tying, interrupted suture and continuous suture.

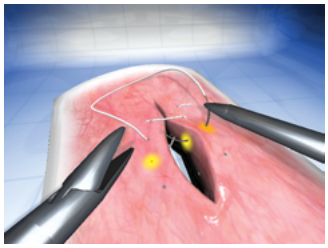
Objectives

- To learn and practice needle loading and needle insertion techniques.
- To become familiarized with different knot tying techniques such as half knot, square knot, ligature and surgeons knot.
- To perform interrupted and continuous suture.



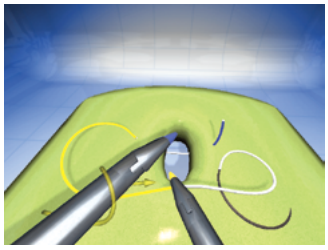
Basic Suturing Task 1 Needle loading and suture placement

Main goal
Positioning the needle at the desired angle between the needle holder jaws.
This task teaches the principles of needle loading and spatial orientation that allow correct needle insertion into the tissue, as well as needle manipulation inside the tissue.



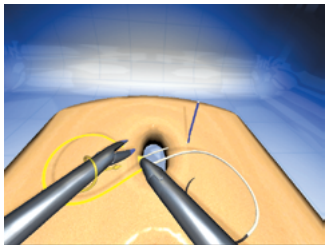
Basic Suturing Task 2 - Continuous Sutures

Main goal
Practice the principles of continuous suture - a series of stitches performed with one thread along a suture line.



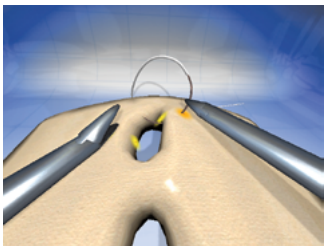
Task 3 Knot tying – half knot

Main goal
Half knot Formation.
This task teaches different methods to form a half-knot using either the 'overwrap' or the 'under-wrap' techniques.



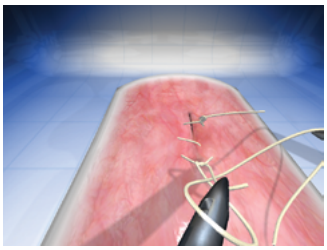
Task 4 Knot tying – square knot

Main goal
Square knot formation.
A square knot is defined as 2 opposing single half knots.
This task teaches different methods to form a square knot using either the 'over-wrap' or the 'under-wrap techniques.



Task 5 Knot tying – ligature and surgeons knot

Main goal
Formation of a ligature knot and a surgeon`s knot.
This task teaches the formation of a ligature knot and a surgeon`s knot using over-wrap and under-wrap techniques.



Task 6 Continuous/interrupted suture

Main Goal
Continuous/interrupted sutures. This task allows free hand practice of continuous or interrupted suturing, using the skills acquired through tasks 1-5. Continuous suture - a series of stitches performed with one thread along a suture line.

Interrupted suture - a series of single stitches tied separately along a suture line.

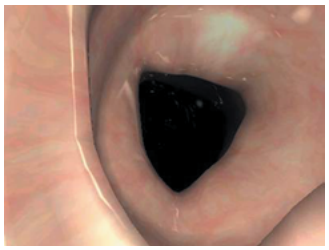
All PGY:

GI Mentor Hands-On: Lower GI Endoscopy Cases 1-2

Colonoscopy cases, featuring an unrestricted training environment, where the trainee can inspect, diagnose and treat, according to the clinical scenario encountered.

Objectives

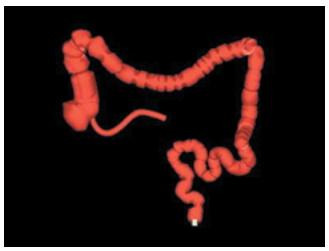
- To perform a complete survey of the Lower GI tract with a forward viewing video endoscope
- To perform diagnostic and therapeutic procedures in diverse virtual patients with different colon anatomies
- To recognize typical lesions and abnormalities
- To perform basic therapeutic procedures



Lower GI Endoscopy Case 1

Medical History
A 30 year old female, with irregular bowel movements, alternates between constipation and diarrhea. Stool is negative for parasites.
She was referred for colonoscopy.

Case Summary
An average colon with no finding.



Lower GI Endoscopy Case 2

Medical History
A 70 year old male with constipation for 40 years. He has been taking laxatives for 30 years. He was referred for colonoscopy.

Case Summary
Long redundant sigmoid and transverse colon. No pathological findings.

October

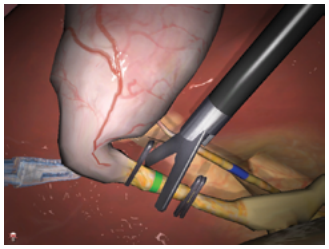
All PGY:

LAP Mentor Hands-On - Lap Chole Procedural Tasks Module Tasks 1-4

Didactic procedural tasks provide a step-by-step tutorial of the Lap Chole procedure.
Each task focuses on one critical step of the procedure: Achieving the critical view of the cystic duct and artery, safe clipping and cutting and dissection of gallbladder from the liver bed. Instructions on safe procedure performance are applied to the anatomical setting. This module helps surgeons identify the visual cues associated with traction/counter-traction of tissue as well as identifying areas requiring additional practice.

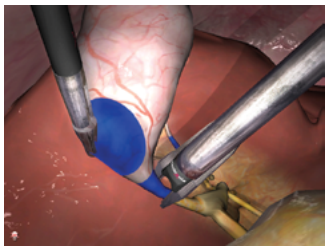
Objectives

- To become familiar with the anatomy of the gallbladder area.
- To learn the principles of safe and accurate clipping and cutting based on correct traction of the gallbladder.
- To expose Calot's Triangle by practicing correct gallbladder traction for secure and accurate clipping and cutting.
- To perform safe exposure of vital structures using correct traction.
- To gain knowledge of the principles of safe dissection and safe cautery in laparoscopic cholecystectomy.
- To perform safe and accurate dissection of the gallbladder from the liver bed, by applying the principles of correct traction.
- To become accustomed to laparoscopic instruments.



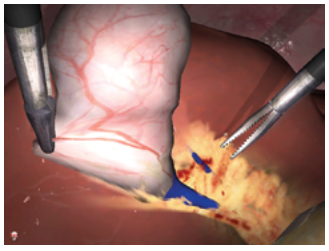
Task 1 - Clipping and Cutting - Retracted Gallbladder

Task Description
Gallbladder already exposed with Hartmann's pouch retracted by a static tool. Clip the cystic artery and duct within a specified area and then cut safely between the clips.



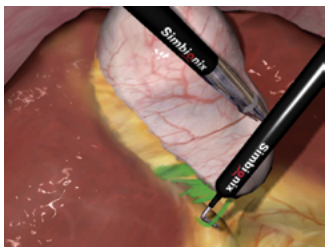
Task 2 - Clipping and Cutting Using Two Hands

Task Description
With the gallbladder already exposed use a blunt grasper to retract Hartmann's pouch. Once correct retraction is achieved, clip the cystic artery and duct within a specified area and then cut safely between the clips.



Task 3 - Dissection - Achieving the 'Critical View'

Task Description
Grasp the infundibulum of the gallbladder, retract away from the liver, and dissect the peritoneal coverings to expose the cystic duct and artery.



Task 4 - Gallbladder Separation

Task Description
Separate the gallbladder from the liver bed with appropriate retraction and dissection of the peritoneal adhesions to the liver bed. Continue dissection until the gallbladder is free from the liver.

GI Mentor Hands-On: Upper GI Endoscopy Cases 1-2

Gastroscopy cases, featuring an unrestricted training environment, where the trainee can inspect, diagnose and treat, according to the clinical scenario encountered.

Objectives

- To perform a complete survey of the Upper GI Tract with a forward viewing video endoscope
- To perform diagnostic and therapeutic procedures in diverse virtual patients with varying anatomy and pathologies
- To recognize typical lesions
- To perform basic therapeutic procedures

Upper GI Endoscopy Case 1

Medical History
A 30 year old male with epigastric pain for the last 6 months. Physical examination does not show anything unusual. No response to omeprazole.
He was referred for gastroscopy.

Case Summary
A normal upper GI tract with no findings.

Upper GI Endoscopy Case 2

Medical History
A 30 year old male with epigastric pain for the last 6 months. Physical examination does not show anything unusual. No response to omeprazole.
He was referred for gastroscopy.

Case Summary
Diverticulum in the middle third of oesophagus and hiatal hernia.
No other findings.

November

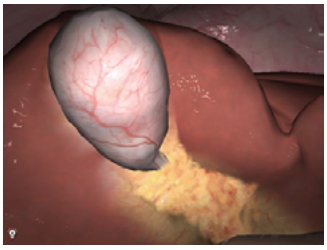
All PGY:

LAP Mentor Hands-On - Lap Chole Complete Procedure Cases 1-6

The realistic Lap Chole procedure simulation resembles a true-to life experience, enhanced even more by tactile feedback. The module provides patient cases of easy to difficult anatomical variations to the cystic duct and positions of arteries, which may otherwise not be experienced during a training period. The module enables free-style training using different techniques, alternative approaches, and acquisition of the skill and knowledge necessary to safely cope with possible complications.

Objectives

- To become familiar with the anatomy of the gallbladder area.
- To become proficient at performing a safe laparoscopic cholecystectomy.
- To familiarize with the pitfalls of easy to difficult anatomical variations to the cystic duct and positions of arteries.



Case 1-6 - Laparoscopic Cholecystectomy

Task Description
Virtual complete cholecystectomy procedures, based on anatomies created from CT/MRI real patient data. Practice a complete cholecystectomy procedure with a range of appropriate instruments.

BRONCH Mentor Hands-On: Essential Bronchoscopy Tasks 1-5

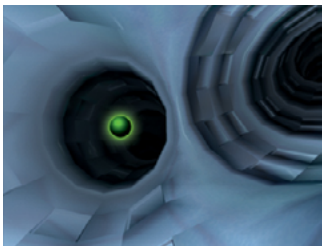
Essential Bronchoscopy skill tasks

The Essential Bronchoscopy module provides designated skill tasks, supporting focused acquisition of the necessary basic bronchoscopic capabilities.
The module provides a highly constructive and didactic training environment, aimed at improving hand-eye coordination and scope navigation, enhancing 3D cognitive perception, acquiring and demonstrating detailed anatomical knowledge of the bronchial tree and adjoining anatomical structures, and practicing step-by-step tissue sampling maneuvers.

Training in an individual focused manner helps accelerating the trainees' learning curve while acquiring and integrating the desired skills.
This module was developed in conjunction with and endorsed by the American Association for Bronchology and Interventional Pulmonology – AABIP

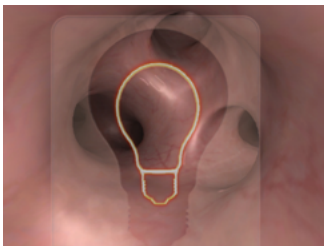
Objectives

- To improve hand-eye coordination
- To acquire basic bronchoscope maneuvering capabilities
- To enhance 3D anatomical perception
- To perform a comprehensive, methodical, bronchoscopic inspection
- To gain familiarity with bronchial anatomy and identify each bronchial segment by name
- To gain familiarity with adjoining mediastinal, hilar, interlobar and lobar lymph node stations, under the IASLC map (2009)
- To practice the step-by-step performance of forceps biopsy, cytology brushing and transbronchial needle aspiration



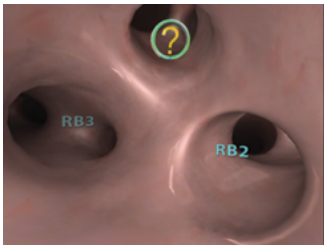
Task 1, Basic Scope Manipulation

Task Description
Learn to navigate the bronchoscope in a cyber-environment to acquire the basic scope manipulation skills and to further develop hand-eye coordination. Manipulate the scope to stay in the center and avoid wall contact while following an object along a randomly selected narrowing lumen.



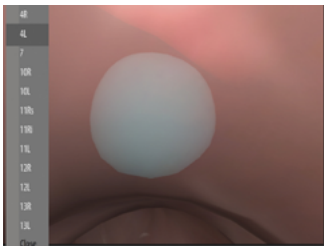
Task 2, Guided Anatomical Navigation

Task Description
Learn and practice correct scope navigation within the anatomical environment. Perform a complete airway inspection using directional guidance.



Task 3, Lung Anatomy – Bronchial Segments

Task Description
Gain familiarity with bronchial anatomy and identify by name each bronchial segment. Following the selection of the desired naming convention (descriptive-numeric or advanced-numeric), perform a complete airway inspection while identifying each bronchial segment by name.

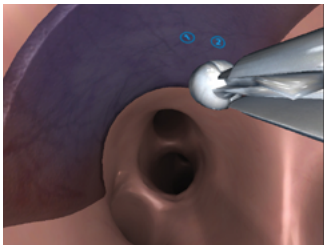


Task 4, Lung Anatomy– Mediastinal Lymph Nodes

Task Description

Gain familiarity with adjoining mediastinal vascular structures and lymph node stations, under the IASLC classification map (2009).

Perform a complete airway inspection and identify each lymph node by name after visualizing it through the bronchial wall.



Task 5, Step-by-Step Diagnostic Maneuvers

Task Description

Acquire the skills needed to perform a forceps, brush and transbronchial needle biopsy. Follow the step by step instructions to obtain tissue sample from a defined region and get immediate feedback about the quality and the efficacy of the maneuver.

December

All PGY:

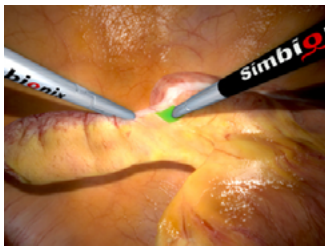
LAP Mentor Hands-On - Appendectomy Module

This module includes a comprehensive, structured curriculum for Laparoscopic Appendectomy: Basic appendectomy procedural tasks, interactively-guided, complete procedure techniques, and free-hand, complete procedure cases. Anatomical variations, such as a regular, retrocecal and preileal appendix, are presented as well as different levels of inflammation such as a moderately inflamed, gangrenous and perforated appendix.
Acquire skills and knowledge of the key components of Laparoscopic Appendectomy: Inspection of the abdominal cavity, aspiration of the purulent collections, exposure of the appendix, control of the appendicular artery, division of the mesoappendix and appendix, specimen retrieval, and hemostasis. Practice a variety of techniques and appropriate use of surgical instruments such as energy devices, stapler, and ligating loop.
The module includes simulation of complications and emergency situations such as injury to the appendicular artery, cecum, terminal ileum, iliac vessels, ureter and perforation of the appendix. Clinical decisions such as extent of cecum mobilization in retrocecal case and extent of appendicular artery exposure can be made in real-time.
Cases include an anatomical 3D map, real-life videos, interactive 3D guidance, and comprehensive, objective performance metrics to enrich and enhance the learning experience.

Objectives

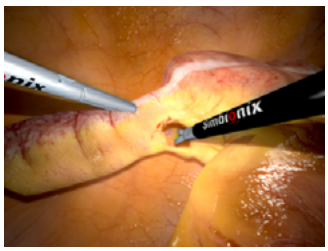
- To acquire basic skills essential for laparoscopic appendectomy while practicing the basic procedural laparoscopic appendectomy tasks.
- To gain experience with various techniques and surgical instruments such as energy devices, stapler and ligating loop in guided techniques.
- To practice the key components of laparoscopic appendectomy in free hand, complete, appendectomy procedure cases.
- To encounter a range of anatomical variations of the appendix with different levels of inflammation.
- To learn to avoid and manage bleeding and potential complications such as perforation of the appendix and injury to the appendicular artery, cecum, terminal ileum, and ureter.

Appendectomy Tasks 1-2



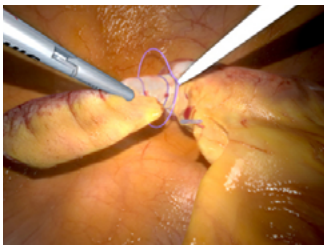
Appendectomy Task 1 - Dissecting the Mesenteric Window

Task Description
To dissect a window in the mesoappendix near the base of the appendix



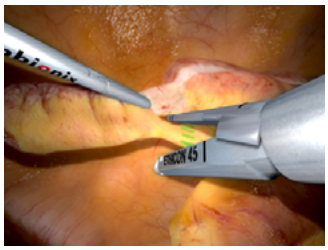
Appendectomy Task 2 - Dissecting the Mesoappendix and Clipping the Artery

Task Description
In this task, you are required to dissect, clip and divide the appendicular artery.



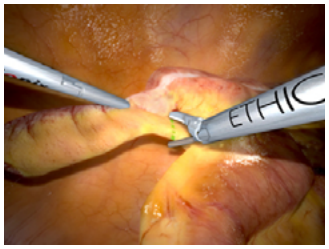
Appendectomy Technique 1 - Clipping the Artery and Ligating the Appendix Using a Ligating Loop

Task Description
In this task, you are required to create a window in the mesoappendix near the base of the appendix, to dissect and control the appendicular artery using clips, and ligate the appendix using the ligating loop.



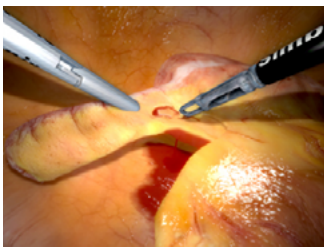
Appendectomy Technique 2 - Division of the Mesoappendix and Base of the Appendix Using a Stapler

Task Description
In this task, you are required to create a window in the mesoappendix near the base of the appendix and divide both the mesoappendix and the appendix using a stapler.



Appendectomy Technique 3 - Control of the Artery Using Energy

Task Description
In this task, you are required to dissect a window in the mesoappendix near the base of the appendix and divide the mesoappendix using energy devices.

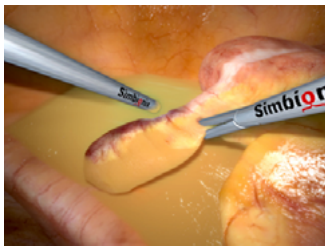


Appendectomy - Appendix in Regular Position

Pathology
Inflammation of the vermiform appendix.

Appendectomy - Appendix in Retrocecal Position

Pathology
Moderate inflammation of the retrocecal appendix.



Appendectomy - Perforated Appendix in Regular Position

Pathology
Free perforation of the appendix with localized purulent peritonitis in the right lower quadrant.

Appendectomy - Gangrenous Appendix in Preileal Position

Pathology
Gangrenous appendicitis with perforation and localized peritonitis.

GI Mentor Hands-On: Flexible Sigmoidoscopy Cases 1-2

Flexible Sigmoidoscopy cases

This module provides training for flexible sigmoidoscopy, enhancing the awareness of colon cancer screening indications. The module consists of cases with varied anatomies and abnormalities

Objectives

- To become familiar with flexible sigmoidoscopy and the indications for colon cancer screening
- To perform flexible sigmoidoscopy in difficult and unusual anatomies
- To recognize various common pathologies and perform biopsies as indicated
- To determine the appropriateness of flexible sigmoidoscopy for colon cancer screening in high risk populations
- To make appropriate recommendations based on common endoscopic findings

Flexible Sigmoidoscopy Case 1

Medical History
A 60 year old male with normal bowel habits referred for colon cancer screening. No family history of colon cancer.

Case Summary
Normal anatomy with no pathological findings.

Flexible Sigmoidoscopy Case 2

Medical History
A 75 year old female with a long standing history of constipation and laxative use referred for colon cancer screening. No family history of colon cancer. Barium X-ray to cecum performed two months prior to presentation, negative for polyps.

Case Summary
Redundant sigmoid colon with no pathological findings.

January

ABSITE Preparation
- ABSITE materials available in resident resource center and through skills sessions

February

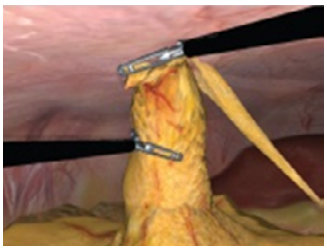
All PGY:

LAP Mentor Hands-On Incisional Hernia Module Cases 1-3

Provides surgeons with true-to-life experience of laparoscopic incisional hernia repair in a controlled and safe environment. Trainees gain an in-depth understanding of abdominal anatomy, skills for carefully separating the adhesion to expose the hernia defect, appreciation of potential complications, and practice safe use of prosthetic mesh and devices used to fixate, suture and staple the mesh.

Objectives

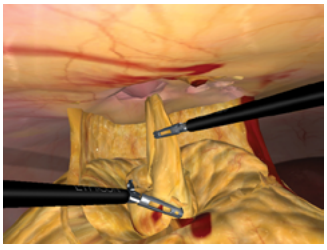
- To learn the skills for carefully separating the adhesion to expose the hernia defect.
- To detect and learn how to avoid potential complications of the hernia procedure.
- To familiarize and practice safe use of prosthetic mesh, suturing and mesh fixation devices.



Case 1 - Umbilical Hernia

Medical History
A 44-year-old female presented with umbilical hernia. Local examination revealed a lump of approximately 3 x 3 cm which becomes visible when coughing.

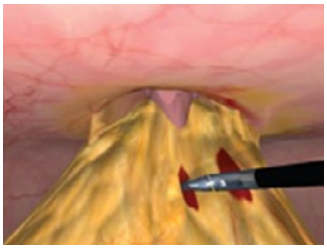
Pathology
Umbilical hernia where the hernia content is incarcerated inside the defect with no adhesions and features round ligament of the liver.



Case 2 - Periumbilical Incisional Hernia

Medical History
A 59 year old male presented with a periumbilical incisional hernia, following previous upper median laparotomy for duodenal ulcer. On physical examination, there was an irreducible and painless bulging of the anterior abdominal wall at the level of the umbilicus.

Pathology
Periumbilical incisional hernia where the hernia content is incarcerated inside the defect and adhesions are attaching the omentum to the abdominal wall.



Case 3 - Subumbilical Incisional Hernia

Medical History
A 71-year-old woman developed an incisional hernia following a previous surgery for sigmoid colon resection. Physical examination revealed an irreducible and painful mass in subumbilical region.

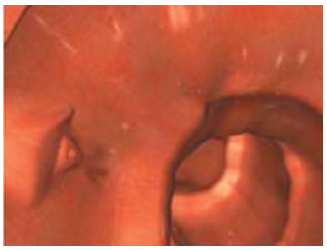
Pathology
Subumbilical incisional hernia where the small bowel is firmly attached to the hernia defect.

GI Mentor Hands-On: Upper GI Endoscopy 1 Case 3-4

Gastroscopy cases, featuring an unrestricted training environment, where the trainee can inspect, diagnose and treat, according to the clinical scenario encountered.

Objectives

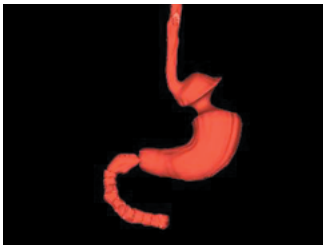
- To perform a complete survey of the Upper GI Tract with a forward viewing video endoscope
- To perform diagnostic and therapeutic procedures in diverse virtual patients with varying anatomy and pathologies
- To recognize typical lesions
- To perform basic therapeutic procedures

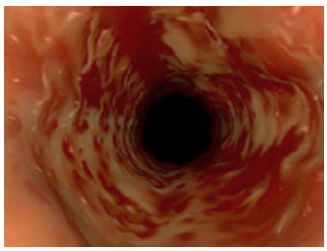


Upper GI Endoscopy Case 3

Medical History
A 25 year old female with transient dysphagia to solid and liquid food for the last 2 years. Occasionally food will regurgitate, specially when lying down after meal. Esophageal manometry revealed non-specific motor abnormality. She was referred for gastroscopy.

Case Summary
J shaped stomach, deformed duodenal bulb. No other findings.





Upper GI Endoscopy Case 4

Medical History
A 54 year old male who complains of epigastric pain and heartburn with radiation to the jaw. He was seen by a cardiologist with no pathological findings. He smokes fifteen cigarettes per day. He experienced good response to therapy with proton pump inhibitors. He was referred for gastroscopy.

Case Summary
Inflammation in the lower third of oesophagus. Hiatal hernia. Duodenal ulcer. No other findings.

March

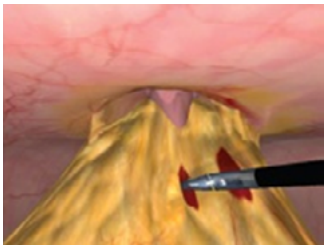
All PGY:

LAP Mentor Hands-On Incisional Hernia Module -Cases 3-6

Provides surgeons with true-to-life experience of laparoscopic incisional hernia repair in a controlled and safe environment. Trainees gain an in-depth understanding of abdominal anatomy, skills for carefully separating the adhesion to expose the hernia defect, appreciation of potential complications, and practice safe use of prosthetic mesh and devices used to fixate, suture and staple the mesh.

Objectives

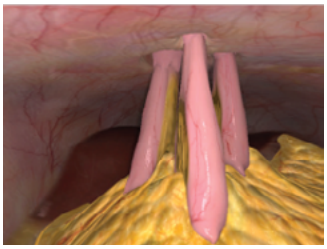
- To learn the skills for carefully separating the adhesion to expose the hernia defect.
- To detect and learn how to avoid potential complications of the hernia procedure.
- To familiarize and practice safe use of prosthetic mesh, suturing and mesh fixation devices.



Case 3 - Subumbilical Incisional Hernia

Medical History
A 71-year-old woman developed an incisional hernia following a previous surgery for sigmoid colon resection. Physical examination revealed an irreducible and painful mass in subumbilical region.

Pathology
Subumbilical incisional hernia where the small bowel is firmly attached to the hernia defect.



Case 4 - Epigastrium Incisional Hernia

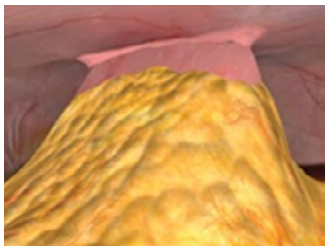
Medical History
A 50-year-old woman with a history of abdominal operations for small bowel obstruction, about three years prior to admission. Physical examination revealed an irreducible bulge within the upper laparotomy scar in the epigastrium. CT-scan showed small bowel loops herniated through the defect of the anterior abdominal wall in the area corresponding to clinical finding of an incisional hernia.

Pathology
Epigastrium incisional hernia where the small bowel loops through the defect of the anterior abdominal wall.

Case 5 - Incisional Hernia At the Site of Post Colostomy Scar

Medical History
A 72-year-old man was admitted with a tender and reducible bulging located several centimeters inferior to a left lumbar scar caused by a previous open 'post colostomy'. An abdominal CT scan showed herniation of omentum through a defect in the abdominal wall near the site of the scar.

Pathology
Incisional hernia at the site of post colostomy scar where a large amount of adhesions are attaching the omentum to the abdominal wall.



Case 6 - Incisional Hernia - Site of an Appendectomy Scar

Medical History
A 61-year-old man was admitted with an incisional hernia at the site of an appendectomy scar, which was formed 6 years prior to admission. During the physical examination a painful, but reducible bulge was palpable, without symptoms of intestinal obstruction.

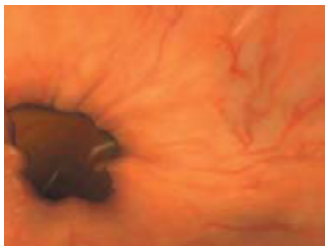
Pathology
Incisional hernia at the site of an appendectomy scar where the colon is firmly attached to the abdominal wall.

GI Mentor Hands-On: Lower GI Endoscopy 1 Case 3-4

Colonoscopy cases, featuring an unrestricted training environment, where the trainee can inspect, diagnose and treat, according to the clinical scenario encountered.

Objectives

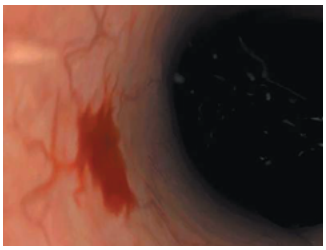
- To perform a complete survey of the Lower GI tract with a forward viewing video endoscope
- To perform diagnostic and therapeutic procedures in diverse virtual patients with different colon anatomies
- To recognize typical lesions and abnormalities
- To perform basic therapeutic procedures



Lower GI Endoscopy Case 3

Medical History
A 50 year old female is referred to you because of family history of colon cancer. Both her parents and her older brother had colon cancer. Stool examination for occult blood was negative.
She was referred for colonoscopy.

Case Summary
A sigmoid with a loop. 'Reversed' splenic flexure. Caecum which is shifted to mid abdomen. No other findings.



Lower GI Endoscopy Case 4

Medical History

A 60 year old male with diarrhea and crampy abdominal pain for 2 weeks. On stool examination neither pathological bacteria nor parasites were seen. He was treated with antibiotics 3 weeks ago because of urinary tract infection.
He was referred for colonoscopy.

Case Summary

Pseudomembranes in rectum. Long sigmoid with diverticula. 'Reversed' splenic flexure. Very redundant transvers colon. Angiodysplasia in caecum.

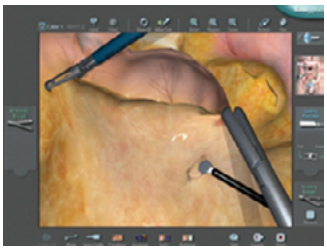
April
All PGY:

LAP Mentor Hands-On - Sigmoidectomy Module (Medial Peritoneal Incision to Distal Division and Anastomosis)

A complete procedure simulation.The module provides an environment in which to perform a wide range of tasks from vessel isolation through creation of the anastomosis before encountering them in the operating room. Trainees learn to determine the best approach to the procedure, practicing real-time clinical decision-making and working safely to prevent complications and respond to injuries. An anatomical 3D map, on-demand real-life videos, procedural instructions and trocar placements complete this exceptional training module.

Objectives

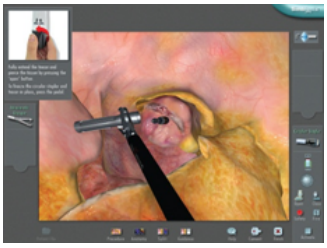
- To perform the peritoneal incision, while elevating the inferior mesenteric pedicle.
- To identify the left ureter.To perform dissection in correct tissue planes.
- To expose and divide the inferior mesenteric artery, inferior mesenteric vein, and left colic artery.
- To mobilize the sigmoid colon and perform rectal wall exposure.To perform a safe distal division of the sigmoid colon.
- To work with a circular stapler to perform laparoscopic end-to-end anastomosis.To learn to appreciate and avoid potential complications.



Sigmoidectomy Case 1 – Medial Peritoneal Incision to Distal Division

Medical History

An 81-year-old man reports new onset constipation and lower abdominal discomfort that began four weeks prior to admission to your hospital. A diagnostic work-up, including colonoscopy, was performed elsewhere. The test revealed a space-occupying lesion in the sigmoid colon. Examination of biopsy specimens taken from the sigmoid tumor by colonoscopy disclosed fragments of moderately differentiated adenocarcinoma. A CT scan revealed a small tumor in the sigmoid colon and no evidence of metastases. The patient was scheduled for laparoscopic-assisted sigmoidectomy.



Sigmoidectomy Case 2 - Anastomosis

Pathology

The sigmoid has been removed by laparoscopic sigmoidectomy. The colon has been exteriorized, prepared for anastomosis, and placed back into the abdomen. The anvil of a circular stapler has been inserted. The minilaparotomy has been closed and pneumoperitoneum reestablished.

Main Goals

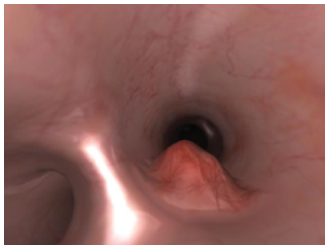
Perform end-to-end anastomosis between the distal and proximal stumps using the circular stapling device.

BRONCH Mentor Hands-On: Diagnostic Bronchoscopy Cases 1-6

6 cases for Diagnostic Bronchoscopy.
This module provides a comprehensive clinical environment for hands-on practicing of airway inspection and bronchoscopic tissue sampling. Diverse methods for endobronchial and transbronchial tissue sampling are available, including biopsy forceps, cytology brush, aspirating needle and BAL. The trainee (solo or with his team members) sedates, manages and monitors the virtual patient, in order to safely and efficiently obtain tissue samples, while preventing risks to patient or equipment and avoiding complications.

Objectives

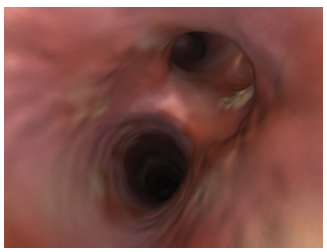
- To practice the complete workflow of diagnostic bronchoscopy procedure
- To gain experience in endobronchial scope navigation in varied anatomies
- To perform a complete airway inspection
- To assess the clinical scenario and use the available sampling methods accordingly
- To practice endobronchial and transbronchial tissue sampling using biopsy forceps, cytology brush, aspirating needle and BAL
- To safely and efficiently obtain tissue samples, avoiding risks to patient and equipment
- To sedate and maintain virtual patient's condition avoiding hemodynamic and respiratory complications
- To practice on a variety of virtual patients, each exhibiting unique anatomy, pathologies and altering response to moderate sedation
- To perform in a true to life environment where operational or clinical mistakes can be made and learnt from
- To gain experience in all aspects of diagnostic bronchoscopy prior to performing on real patients



Diagnostic Bronchoscopy Cases 1

Medical History
An outpatient 58 year old male, weighing 98 kg, was referred with a complaint of persistent cough. Past smoker for 15 years, ~30 cigarettes a day, quit smoking 7 years ago. A chest X-ray showed no findings.

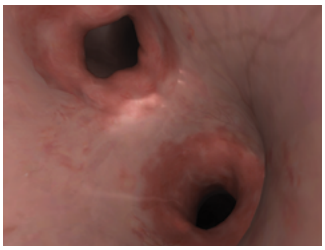
Case Summary
A virtual patient with an endobronchial lesion, not showing on chest X-ray, in the left lower lobe. Perform a complete evaluation, find the lesion and obtain tissue samples using diagnostic tools of choice.



Diagnostic Bronchoscopy Cases 2

Medical History
A 56 year old male Russian immigrant, weighing 85 kg, complaining of persistent cough, night sweating and weight loss. Patient is a smoker, 15 to 20 non-filter cigarettes a day. Thoracic CT scan shows a thin walled cavitary lesion with air-fluid level in the right middle lobe.

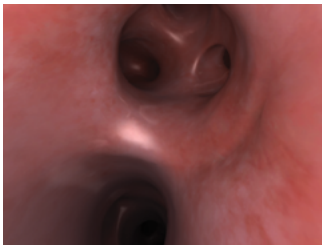
Case Summary
A case of Aspergillus. Perform a complete evaluation and obtain tissue samples, using diagnostic tools of choice.



Diagnostic Bronchoscopy Cases 3

Medical History
A 56 year old female, weighing 52 kg, complaining of shortness of breath and fatigue. A cardiac inquiry showed no findings. Patient is a smoker, ~20 cigarettes a day. A thoracic CT scan demonstrated two solid masses in the left upper lobe and the left lower lobe. Enlarged subcarinal and 11L lymph nodes were demonstrated as well.

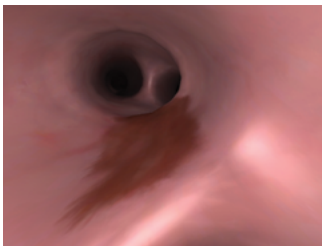
Case Summary
A virtual patient with endobronchial malignancies and enlarged LN 7 and LN 11L. Perform a complete evaluation, and obtain endobronchial and transbronchial tissue samples using diagnostic tools of choice.



Diagnostic Bronchoscopy Cases 4

Medical History
An eight YO boy with a history of recurring infections was referred with coughing and shortness of breath. A chest X-Ray showed no findings. Patient is weighing 28 kg. (61.7 lbs).

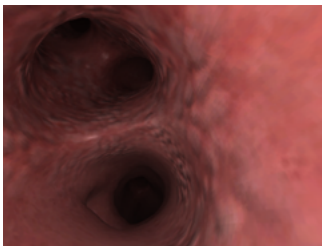
Case Summary
A pediatric virtual patient with, recurring infections. Perform a complete evaluation, and diagnose using diagnostic methods of choice.



Diagnostic Bronchoscopy Cases 5

Medical History
An outpatient 41 year old male, weighing 73 kg, complaining of a persistent cough, with minimal blood clots on sputum. Patient is a non-smoker, HIV positive. A CT scan showed an enlarged 11Rs lymph node of 2.9 cm.

Case Summary
A virtual patient with Kaposi's sarcoma and an enlarged LN 11Rs. Perform a complete evaluation, using diagnostic tools of choice.



Diagnostic Bronchoscopy Cases 6

Medical History

A 54 YO male exhibiting symptoms of cough, severe dyspnea and tiredness without fever or night sweats.

A chest CT demonstrated diffused reticulonodular infiltrates, and bilateral mediastinal, hilar and interlobar lymphadenopathy. Lymph node stations 2R, 4R, 4L, 7, 10R, 10L, 11Rs, 11Ri and 11L are visible.

Case Summary

A virtual patient with sarcoidosis, presenting both diffused reticulonodular infiltrates and multiple enlarged lymph nodes. Perform a complete evaluation, and obtain endobronchial and transbronchial tissue samples from sites of choice.

May

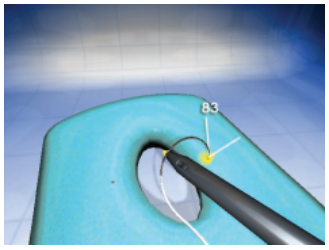
PGY 1-2:

LAP Mentor Hands-On - Suturing Tasks 1-6

6 tasks for practicing the basic suturing skills.The Basic Suturing Module is a unique and realistic module designed to train until proficient at basic suturing techniques for all fields of laparoscopic surgery: All tasks are illustrated by instructional videos that greatly enhance the training process. Real suturing handles enable realistic training of needle loading, needle insertion, knot tying, interrupted suture and continuous suture.

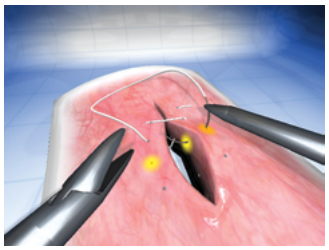
Objectives

- To learn and practice needle loading and needle insertion techniques.
- To become familiarized with different knot tying techniques such as half knot, square knot, ligature and surgeons knot.To perform interrupted and continuous suture.



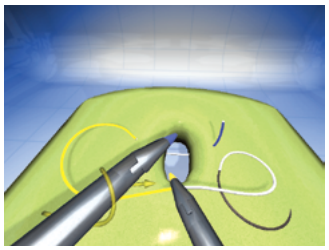
Task 1 Needle loading and suture placement

Main goal
Positioning the needle at the desired angle between the needle holder jaws.
This task teaches the principles of needle loading and spatial orientation that allow correct needle insertion into the tissue, as well as needle manipulation inside the tissue.



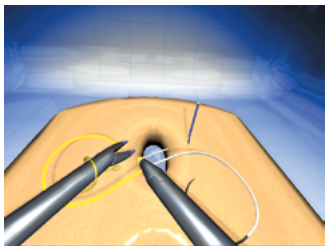
Basic Suturing Task 2 - Continuous Sutures

Main goal
Practice the principles of continuous suture - a series of stitches performed with one thread along a suture line.



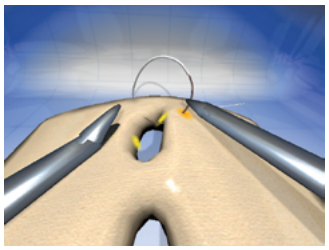
Task 3 Knot tying – half knot

Main goal
Half knot Formation.
This task teaches different methods to form a half-knot using either the 'overwrap' or the 'under-wrap' techniques.



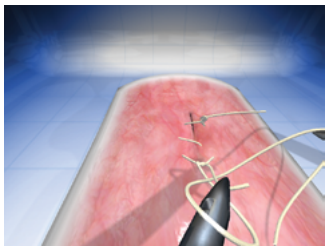
Task 4 Knot tying – square knot

Main goal
Square knot formation.
A square knot is defined as 2 opposing single half knots.
This task teaches different methods to form a square knot using either the 'over-wrap' or the 'under-wrap techniques.



Task 5 Knot tying – ligature and surgeons knot

Main goal
Formation of a ligature knot and a surgeon`s knot.
This task teaches the formation of a ligature knot and a surgeon`s knot using over-wrap and under-wrap techniques



Task 6 Continuous/interrupted suture

Main Goal
Continuous/interrupted sutures.
This task allows free hand practice of continuous or interrupted suturing, using the skills acquired through tasks 1-5. Continuous suture - a series of stitches performed with one thread along a suture line.
Interrupted suture - a series of single stitches tied separately along a suture line.

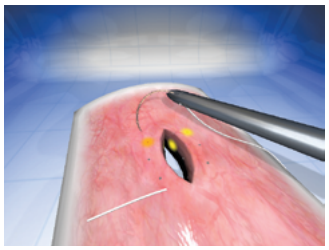
PGY 3-5:

LAP Mentor Hands-On: Advanced Suturing Tasks 1-7

7 tasks for practicing advanced suturing skills.The Advanced Suturing Module is a unique and realistic module designed to train until proficient at intracorporeal suturing and knotting techniques for all fields of laparoscopic surgery. The advanced tasks include practicing 'backhand' technique, and suturing in difficult suture line angles as encountered in procedures. All tasks are illustrated by instructional videos that greatly enhance the training process. Real suturing handles enable realistic training.

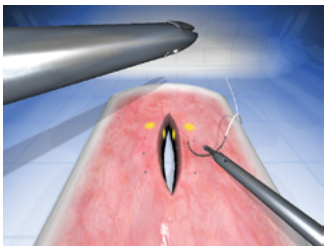
Objectives

- To learn and implement backhand technique.
- To practice suturing in difficult suture line angles as encountered in real life procedures.To learn how to perform anastomosis.



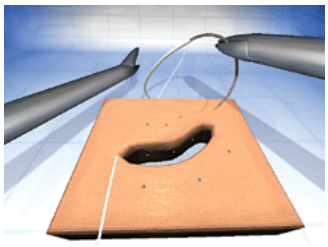
Advanced Task 1: Backhand technique

Main Goal
Practicing backhand suturing technique.
This task teaches the backhand suturing technique, which is practiced in this task by performing a continuous suture.
When using the backhand technique, the needle is held with its tip pointing downwards and towards the center of the operative field.



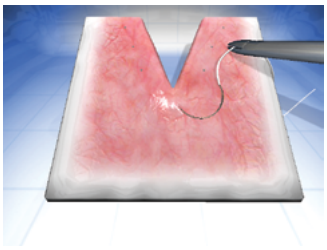
Advanced Task 2: U stitch

Main Goal
Practicing backhand suturing
technique. This task teaches how to perform a U stitch in order to practice both forehand and backhand techniques.
The U stitch is used to handle a gentle tissue which can be easily torn.



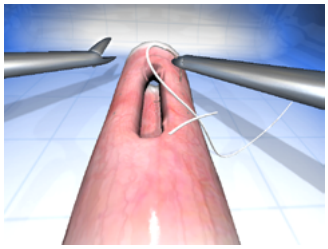
Advanced Task 3: Curved suture line

Main goal
Needle insertion in difficult suture line angles.
This task allows free practice of continuous or interrupted suturing along a curved suture line, using the skills acquired in previous tasks.
It requires determining of the best approach to easy completion of the task; Holding the needle with either the right or left needle holder, using the forehand or backhand technique.



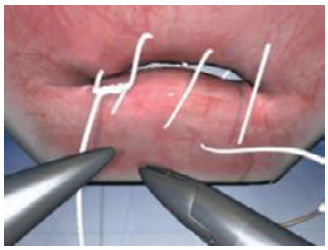
Advanced Task 4: Slanted plane suture line

Main goal
Needle insertion in slanted suture line.
This task allows free hand practice of continuous or interrupted suturing along a suture line, positioned in a slanted plane. Slanted planes are encountered in laparoscopic procedures: for example, during fundoplication – when fixing the hiatus of the diaphragm (approximation of the crus).



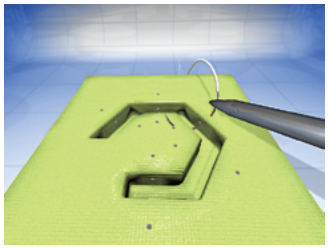
Advanced Task 5: Anastomosis

Main goal
Free hand practice of forming an anastomosis using either continuous or interrupted suturing.
The model we have selected demonstrates the anastomosis between a gastric pouch and a jejunal limb, often used in digestive tract surgery such as gastric bypass.



Advanced Task 6: Upper Plane Suturing

Main goal
Free hand practice of continuous or interrupted upper plane suturing, often used in procedures such as ventral hernia repair and hysterectomy.



Advanced Task 7: Hexagonal Suture Line

Main goal
Free hand practice of continuous or interrupted suturing along a hexagonal suture line, replicating the challenges that are met during both the urethrovesical anastomosis in laparoscopic prostatectomy, and the ureteropelvic junction anastomosis in laparoscopic pyeloplasty.

All PGY:

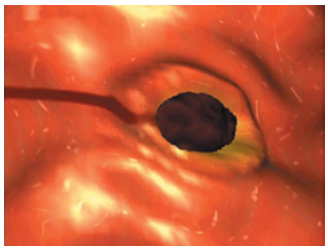
GI Mentor Hands-On: GI Bleeding Cases 1-2

Gastric Bleeding cases

This module provides hands-on training for emergency gastric bleeding situations that require immediate inspection and urgent treatment. The different cases present with varied emergency bleeding situations in different locations along the upper GI tract.

Objectives

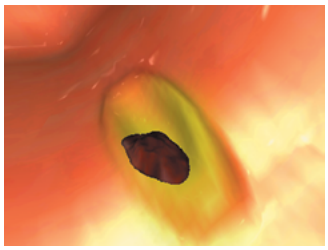
- To perform a complete survey of the Upper GI tract throughout an emergency endoscopy
- To perform diagnostic procedures in cases with symptoms of bleeding lesions
- To perform therapeutic procedures using a variety of appropriate accessories (tools) intended for bleeding pathologies



GI Bleeding Cases 1

Medical History
A 64 year old female arrived at the Emergency Room due to hematemesis. She had vomited once with fresh blood at home and then called the ambulance. Upon her arrival at the hospital she is awake but pale. The blood pressure is 130/60 mmHg and the pulse rate is 112/min. A nasogastric tube was passed and it retrieved clots of red blood mixed with clear aspirate. She was referred for gastroscopy. Immediately prior to endoscopy, the stomach was cleared via the nasogastric tube.

Case Summary
Bleeding ulcer (Forrest IB) on the lesser curve above the angulus.



GI Bleeding Cases 2

Medical History
A 62 year old female complaining of fatigue and dizziness for the last 2 days. Her family doctor found anemia and referred her to the hospital on suspicion of gastrointestinal bleeding. On her arrival at the hospital she was pale without signs of circulatory instability. A nasogastric tube was passed retrieving clear aspirate mixed with 'coffee grounds'. She was scheduled for gastroscopy the following morning.

Case Summary
Ulcer with a clot (Forrest IIB) on the lesser curve below the angulus.

June

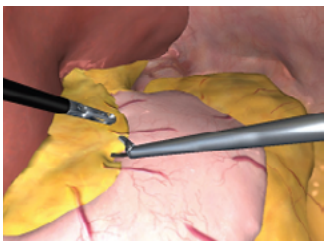
All PGY:

LAP Mentor Hands-On -Gastric Bypass Module Cases 1-4

4 key steps for performing laparoscopic gastric bypass. Provides surgeons with the opportunity to perform advanced tasks including creation of the gastric pouch, measurement and division of the jejunum, gastrojejunal anastomosis and enteroenterostomy anastomosis. Trainees practice the technical aspects of laparoscopic Roux-en Y creation and jejunojejunostomy and gain an in-depth understanding of intra-operative problems during lap bypass surgery and how to avoid them. Familiarity with instruments is gained by experience with a variety of procedure specific surgical instruments, while instructional movies enhance knowledge of the procedure.

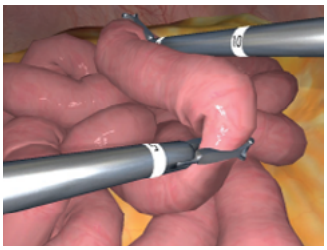
Objectives

- To practice creating the gastric pouch in a simulated anatomy.
- To learn the principles and techniques of measuring and dividing the jejunum into duodenojejunal limb and gastrojejunal limb.
- To perform gastrojejunal anastomosis.
- To perform enteroenterostomy anastomosis (2 Anatomical Positions).



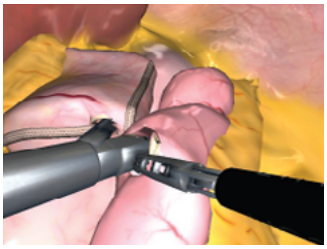
Gastric Bypass - Case 1: Creating the Gastric Pouch

Task Description
The case starts with the liver already retracted cephalad.
The patient's BMI is 40.



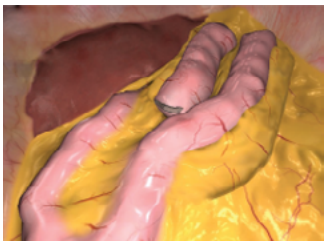
Gastric Bypass - Case 2: Measuring and Dividing the Jejunum

Task Description
Measuring and dividing the jejunum into duodenojejunal limb and gastrojejunal limb.
The case starts with the greater omentum and the transverse mesocolon already retracted cephalad.
The patient's BMI is 40.



Gastric Bypass - Case 3: Gastrojejunal Anastomosis

Task Description
The case starts after the division of the jejunum and the stabilization of the gastrojejunal limb next to the gastric pouch. The gastrojejunal limb is represented by a short segment of the jejunum.



Gastric Bypass - Case 4: Enteroenterostomy Anastomosis

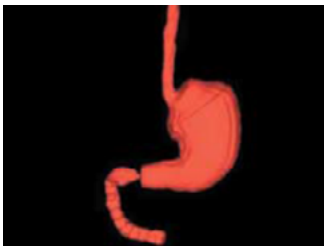
Task Descriptio n
The case begins with the possibility of choosing between anatomical positions A or B. In A, the stump of the duodenojejunal limb is proximal, in B, distal.
The jejunum has been divided and the duodenojejunal limb, stabilized next to the distal part of the gastrojejunal limb. Each limb is represented by a short segment of the jejunum.

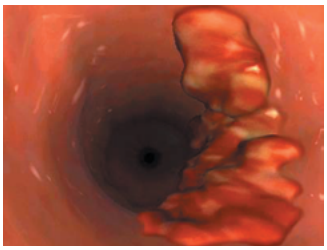
GI Mentor Hands-On: Upper GI Endoscopy Cases 5-6

Gastroscopy cases, featuring an unrestricted training environment, where the trainee can inspect, diagnose and treat, according to the clinical scenario encountered.

Objectives

- To perform a complete survey of the Upper GI Tract with a forward viewing video endoscope
- To perform diagnostic and therapeutic procedures in diverse virtual patients with varying anatomy and pathologies
- To recognize typical lesions
- To perform basic therapeutic procedures

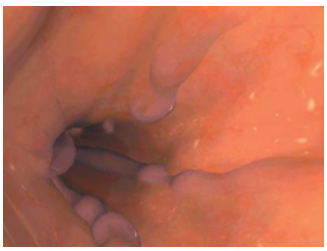




Upper GI Endoscopy Case 5

Medical History
An 80 year old male with 10 kg weight loss for the last 4 months. He feels bloated following meals and once a day he has to vomit. He was referred for gastroscopy.

Case Summary
Esophagus with epipheric diverticulum. Stomach with tumor in antrum and sessile polyp in fundus.



Upper GI Endoscopy Case 6

Medical History
A 55 year old female known to have chronic liver disease and cirrhosis due to viral Hepatitis C. She was admitted to the hospital because of upper GI bleeding. She was referred for gastroscopy.

Case Summary
Varices in esophagus. J shaped stomach with bleeding gastric ulcer in antrum.