SIMU-606: Teach the Teacher: It’s Never Too Late

Presented in affiliation with the American College of Obstetricians and Gynecologists

ASSESS COURSE

Advanced Surgical Simulation and Endoscopic Surgical Simulation

Course Instructor Manual
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1. Introduction to Course:

Welcome to the Advanced Surgical Simulation and Endoscopic Surgical Simulation (ASSESS) Instructor Course. At the completion of this course, you will have a solid understanding of why simulation training is so important for Gynecologic Surgery as well as know how to implement and run the course itself.

It does not matter if you have previous experience in simulation training. You will be provided with very clear instructions and have the opportunity to practice with

2. Disclaimer:

• Every effort has been made to ensure that the instruction and materials contained within this course are based on current evidence-based practice, but new recommendations may become available and inadvertent errors are always possible. In every case all variables must be taken into consideration and clinical judgment must be used. ACOG does not accept any liability for medical care rendered by those who take this course.

• The simulators discussed in this course manual are just some of the options available. The inclusion or exclusion of any specific simulators should not be construed as an official endorsement or negative commentary on any of the available simulator options.

• All materials are copyrighted and provided for educational use and may not be modified, altered, or otherwise distributed without prior authorization.
3. **Introduction Presentations**

a. Instructor course introduction presentation
4. ASSESS Course Instructor Setup Manual

Course Learning Objectives:

- All learners will review procedures for selected surgical simulations
  - Laparoscopic Ovarian cystectomy
  - Laparoscopic Hysterectomy
  - Vaginal Hysterectomy
  - Cystoscopy

- Learners will demonstrate correct technique and performance of selected gynecologic surgical procedures
  - Laparoscopic Ovarian cystectomy
  - Laparoscopic Hysterectomy
  - Vaginal Hysterectomy
  - Cystoscopy

Basic Course Notes:

Participants: As the benefits from simulation training are directly related to actual inclusion in and hands-on time during the actual performance of the surgical procedure, class sizes will be limited to an appropriate size.

1) Each learner will be assigned to a 2 or 3 person team for the course.  The maximum number of teams for any course will be determined by the number of instructors and simulation equipment available at the institution.

2) After a brief introduction and didactics to review surgical procedures and best evidence for the covered gynecologic surgical and endoscopic surgical procedure, the teams will go to the initial simulation station.

3) Number of stations at same time set up will depend on the number of teams.
**Staffing Requirements:** The number of staff will depend on the size of the group and the type of providers scheduled. Each station must have at least one staff available to run the simulation and conduct the evaluation and debriefing.

**ASSESS Course Station Format:**

At each of the stations, run the teams through in the following manner:

1. Orient the participants to the high or lower fidelity simulator and its capabilities/limitations
2. Review and discuss the topic Didactic
3. Review and discuss the topic Clinical Checklist
   a. Discuss individual roles during the procedure
4. Allow each participant to perform the identified procedure
5. Review the Basic Assumption:
   “Everyone participating in this simulation training is intelligent, well-trained, cares about doing their best”
6. Run the Clinical Scenario
7. Debrief the simulation with the provided evaluation form

**Simulation Station Setup:**

The ASSESS course can be run in the classroom, a simulation OR or actual OR if available.
Construction and set-up of Low Fidelity Ovarian Cystectomy Model

1.0 Example Case Scenarios

A 24-year-old nulligravid woman with an LMP three weeks ago has a history of dysmenorrhea for the past several years. Her pain has not been relieved with NSAIDs or cyclic oral contraceptives. She has noted the recent onset of deep dyspareunia. She is sexually active and has not used contraception for the past two years. On physical examination, she has a tender 7 cm mass in the right adnexa. Endovaginal sonography confirms the presence of a right adnexal mass.

2.0 Pre-Simulation Briefing/Orientation

- Do a thorough orientation of the room, equipment and simulators. This should take no more than 5–10 min.
- Alternatively, if you want to have the learners build the simulator, this will take 20–30 min.
- Set the stage for the simulation by doing the following:
  - Discuss the learning objectives for the day.
  - Have the learners practice patient counselling by counselling you about the procedures.
  - Explain that everything should either be verbalized or done as if this was an actual operating room setting.
3.0 Ovarian Cystectomy Simulation Setup

Objective:
Creating a Cystectomy Model for simulation of performing an ovarian cystectomy to achieve the following educational objectives and surgical skills:
1. Identification of anatomical structures
2. Knowledge of steps in Ovarian Cystectomy including dissection of the ovarian cyst wall
3. Flow of operation and assessment of forward planning, time and motion
4. Knowledge and use of instruments
5. Use of assistants

4.0 Basic Scenario Tips

Answer to common questions that come up:
- The purpose of this simulator is to familiarize the learners with the common steps of an ovarian cystectomy.
- Remember that this is a simulation, nothing can be as exact as real-life.
- Reiterate what is important as the learners goes through the steps of the procedures from start to finish so that they are more familiar with the steps when they actually do these procedures in the operating room.

MATERIALS (cost approximately $5)
Some of the materials can be reused
Most of the materials can be substituted for similar products and are easily found
Fill water balloon with 30cc of plain yogurt. Secure Tightly.
Once all water balloons are filled, insert each one into a 15" balloon. The water balloon and 15" Balloon need to be different contrasting colors.

Insert 1cc of KY Jelly after yogurt filled balloon is inserted, and secure entire balloon as tight as you can possibly get it. When done, they will be attached to the uterine model and used to
Secure "ovaries" and "fallopian tubes" to uterine model. For now use staples and during lab, have more tubes and ovaries present to replace used ones. Have a staple, staple remover, and trashcan handy during lab as well.
For the lab, we used the FLS boxes. To use them for this lab, the FLS markings on the box need to be covered in some way so that they are not visible to the eye. Place a chux pad in the box. Attach an alligator clip to the back of the box with a string.

The uterus will be secured in the box using only alligator clips, make sure it is fairly secure using the two clips on the FLS box and the one added in the back for this lab.

Instrumentation needed for Actual lab:

FLS Box, Maryland graspers, Scissors, trocars
Learning Objectives: LAPAROSCOPIC OVARIAN CYSTECTOMY

Provider #/name: _______________________________ Date: _______________________________
Training site: _______________________________ Grader: _______________________________

Training level: (circle one) PGY-1  PGY-2  PGY-3  PGY-4  Fellow  Staff

Level 1 (Declarative Knowledge)

1. The learner should be able to understand the appropriate patient selection for laparoscopic ovarian cystectomy.
   - Ultrasound criteria not suggestive of malignancy
   - Size amenable to surgeon’s skill set for laparoscopic management

2. The learner should be able to list in a verbal or written mode major benign ovarian cysts that can be managed by cystectomy.
   - dermoid
   - serous or mucinous cystadenoma
   - symptomatic hemorrhagic ovarian cyst
   - ovarian torsion (release the torsion and remove the cyst)
   - endometrioma
   - persistent simple cyst

3. The learner should be understand that drainage/ fenestration of the ovarian cysts (other than follicular cyst) is associated with a high recurrence rate

4. The learner should be familiar with the qualifications for, as well as relative and absolute contraindications for conservative laparoscopic management of ovarian cysts
   - Qualifications:
     - Hemodynamically stable patient
     - Patient able to tolerate adequate Trendelenburg position
     - Proper equipment available
     - Adequate surgical skills possessed by the surgeon
   - Contraindications:
5. The learner should describe or identify in a verbal or written mode major anatomic landmarks of the pelvis and specific anatomy of the ovary
   - Location = ovarian fossa
     - Bounded by: external iliac vessels, obliterated umbilical artery, ureter
   - Mesovarium
     - Posterior portion of broad ligament
     - Supports ovary
     - Blood supply of ovary
   - Suspensory ligament of the ovary = Infundibular Pelvic Ligament
     - Attaches ovary to the pelvic side wall
     - Contains the arterial, venous and nerve supply to the ovary
   - Uterovarian ligament
   - Blood supply
     - Arterial = descending aorta
     - Venous
       - Left – drains into the left renal vein
       - Right – drains directly into the inferior vena cava
   - Hilum
     - Entrance of blood and nerve supply to the ovary
     - Arcuate formed by branch of the ovarian and tubal branch of the uterine arteries
   - Nerve supply
     - Ovarian, hypogastric and aortic plexus

6. The learner should be able to in a verbal, written or demonstration mode identify, assembly, and the use of all equipment necessary for LSC ovarian cystectomy
   - laparoscopic trocars
   - Veress needle (optional)
   - laparoscope
   - laparoscopic camera head
   - light cord
   - CO2 tubing
   - Laparoscopic tower equipment
   - Monopolar or bipolar needle, LSC scissors, Harmonic scalpel or hook
7. The learner must in a verbal, written or demonstrative mode identify the number, size and locations of incisions for port placement to facilitate performing LSC ovarian cystectomy
   - intraumbilical (5 or 10 mm)
   - minimum of two accessory ports (5 or 10 mm) placed properly in the lower lateral quadrants, suprapubic position and/or lateral upper abdominal position
   - additional ports as needed

**Level 2 (Simulated and Clinical Performance)**
* (Specific Task: LSC ovarian cystectomy)

1. Prepare and position the patient for laparoscopy
2. Describe or place uterine manipulator/sponge stick
3. Able to assemble camera, suction tubing and energy sources/instruments
4. Describe or perform gaining initial access to abdominal cavity and create appropriate pneumoperitoneum
   a. Veress needle
   b. Direct trocar insertion (blind or visual)
   c. Open (Hasson)
5. Visually inspect the pelvis and upper abdomen to survey anatomy
6. Demonstrate proficiency maneuvering laparoscope
7. Describe or demonstrate secondary trocar placement to avoid complications and maintain sufficient spacing for full range of motion, including proper trocar diameters
8. Demonstrate collection of pelvic washings (optional)
9. Identify the abnormal ovary
10. Evaluate the opposite ovary
11. Grasp, position, and orient the ovary with care to avoid rupturing the ovarian cyst.
12. Incising the ovarian serosa at the antihilum aspect of the ovary without damaging the ovarian cyst.
   - monopolar
   - scissors
   - harmonic
13. Grasp both sides of the ovarian serosa to provide stability and visualization of the underlying ovarian cyst.
14. Demonstrate understanding of adequate ovarian serosal incision to avoid undue traction of the ovarian cyst to prevent rupture.
15. Remove the cyst from the overlying serosa with sharp and blunt techniques minimizing traction of the ovarian cyst.
16. Retrieve the entire specimen and place this in a specimen retrieval pouch.
17. Confirm hemostasis by lowering intraabdominal pressure.
18. Judicious use of cauterity to achieve hemostasis.
19. Irrigate and remove blood and fluid by suction.
20. Wrap ovary with intercede.
21. Close appropriate fascial defects after trocar removal (> 5 mm).
22. Properly remove all remaining trocars.
23. Properly close skin incisions.
ACOG Simulations Consortium: LAPAROSCOPIC OVARIAN CYSTECTOMY CHECKLIST

Provider # / Name ______________________________  Date     ___________________
Training Site __________________________________  Grader ___________________

*Training Level:* (Circle One)    PGY-1      PGY-2  PGY-3  PGY-4  Staff  Fellow

**Scoring Instructions:** All scores will be in complete integers. No fractions are given. Participant will receive the full credit if the task is performed satisfactorily and 0 if either not performed or performed unsatisfactorily.

### PART 1 Patient Set Up:

<table>
<thead>
<tr>
<th>Points (Circle 0 OR 1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Time out includes:</td>
<td></td>
</tr>
<tr>
<td>a. Name</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>b. Allergies</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>c. Antibiotics</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>d. SCD/DVT prophylaxis</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>e. Procedure</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>2. NGT or OG tube placed</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>3. Positioning/stirrups/pressure points</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>4. Describes or performs exam under anesthesia</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>5. Describes or drains bladder/places foley</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>6. Describes/places uterine manipulator/sponge stick</td>
<td>Yes No 0 / 1</td>
</tr>
</tbody>
</table>

**Total:** / 10

### Part 2 Instrument Set Up:

<table>
<thead>
<tr>
<th>Points (Circle 0 OR 1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identifies instrumentation</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>2. Correctly assembles instruments</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>3. Able to assemble camera</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>4. Connects suction tubing</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>5. Connects energy sources</td>
<td>Yes No 0 / 1</td>
</tr>
</tbody>
</table>

**Total:** / 5

### Part 3 Entry/Peritoneal Access

<table>
<thead>
<tr>
<th>Points (Circle 0 OR 1)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Describes/performing gaining initial access to abdominal cavity</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>2. Creates appropriate pneumoperitoneum with one of below:</td>
<td></td>
</tr>
<tr>
<td>a. Veress needle</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>b. Open (Hasson)</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>c. Direct trocar insertion</td>
<td>Yes No 0 / 1</td>
</tr>
<tr>
<td>d. Left upper quadrant</td>
<td>Yes No 0 / 1</td>
</tr>
</tbody>
</table>

**Total:** / 5
**Part 4: LSC Procedure**

(CIRCLE 0 OR 1)

1. Places patient in Trendelenburg
   - Yes  No   0 / 1
2. Visually inspects and describes the pelvis and upper abdomen anatomy
   - Yes  No   0 / 1
3. Identifies and describes key surgical anatomy
   - Yes  No   0 / 1
4. Describes or demonstrates safe secondary trocar placement
   - Yes  No   0 / 1
5. Placement location maintains sufficient spacing for full range of motion
   - Yes  No   0 / 1
6. Chooses appropriate trocar diameters
   - Yes  No   0 / 1

**Total:** / 6

**Part 5: Ovarian Cystectomy Procedure**

(CIRCLE 0 OR 1)

1. Describes or performs pelvic washings if indicated
   - Yes  No   0 / 1
2. Identifies the ovarian cyst site
   - Yes  No   0 / 1
3. Evaluates the opposite ovary
   - Yes  No   0 / 1
4. Grasps, positions, and orients the ovary for appropriate incision
   - Yes  No   0 / 1
5. Incises the ovarian serosa without rupturing cyst
   - Yes  No   0 / 1
6. Makes an adequate incision overlying the ovarian cyst without rupturing cyst
   - Yes  No   0 / 1
7. Retracts ovarian serosa away from cyst without rupturing cyst
   - Yes  No   0 / 1
8. Describes or confirms hemostasis lowering intraabdominal pressure
   - Yes  No   0 / 1
9. Describes or performs irrigating and removing blood and fluid
   - Yes  No   0 / 1
10. Wraps ovary in interceed
    - Yes  No   0 / 1
11. Releases CO2
    - Yes  No   0 / 1
12. Reverses Trendelenburg
    - Yes  No   0 / 1
13. Describes or closes appropriate fascial defects after trocar removal
    - Yes  No   0 / 1
14. Describes or properly closes skin incisions
    - Yes  No   0 / 1

**Total:** / 14

**TOTAL CHECK LIST SCORE:** / 37

*Add Global Rating scale to scoring (see addendum 1)*
a. Laparoscopic Hysterectomy
   1. Laparoscopic Hysterectomy learning objectives
   2. Simulation Curriculum Laparoscopic Hysterectomy
   3. Laparoscopic Hysterectomy evaluation form

i. Laparoscopic Hysterectomy (instructor can use their chosen Didactic lecture)

**Laparoscopic Hysterectomy**

- **Simulator options:**
  - The simulator used must have the ability to simulate a laparoscopic hysterectomy. Some available options include:
    - Lap Mentor Simulator
    - Simbionix Simulator
    - Limbs & Things pelvic trainer

- **Staff/Instructor roles:**
  - Staff to play role of assistant surgeon

- **Additional equipment:**
  - Laparoscopic surgical instruments
  - Suture
  - Harmonic scalpel
  - Fluid to simulate bleeding

- **Simulation Instructions:**
  - Utilize the simulation curriculum for the scenarios
  - Allow the team to use the Laparoscopic Hysterectomy Checklist
  - Sample forms for evaluation

- **Debriefing:**
  - Use the provided checklist/evaluation forms to guide the group through the debrief and review performance
- Allow all members of the group to practice and demonstrate the Laparoscopic Hysterectomy procedure on the simulator

- Evaluation:
  - The participant will be evaluated with the provided evaluation form
  - If the instructor feels that critical errors were made, then the procedure may be conducted again
  - If there are specific elements of the procedure that the instructor feels the participant needs to practice, this can also be done

ACOG Simulations Consortium- Learning Objectives:
Laparoscopic Hysterectomy

**Level 1 (Declarative Knowledge)**

1. The learner should be able to list the benefits of a laparoscopic hysterectomy:
   - Lower morbidity
   - Less pain
   - Rapid recovery
   - Faster return to normal activities

2. The learner should be able to list indication/qualifications for laparoscopic hysterectomy
   - No evidence of malignancy
   - Pathology confined to uterus
   - Proper equipment available
   - Adequate surgical skills possessed by the surgeon
   - *Relative Contraindications: enlarged uterus, prior pelvic surgery*

3. The learner should be able to in a verbal, written or demonstration mode identify, assemble, and the use of all equipment necessary for laparoscopic hysterectomy
- laparoscopic trocars
- Veress needle (optional)
- laparoscope
- laparoscopic camera head
- light cord
- CO2 tubing
- Laparoscopic tower equipment
- Monopolar or bipolar LSC scissors, Harmonic scalpel or hook
- Suction irrigator
- Laparoscopic grasper

4. The learner should be able to in a verbal, written or demonstration mode identify, assembly, and the use of all equipment necessary for laparoscopic hysterectomy
   - laparoscopic trocars
   - Veress needle (optional)
   - laparoscope
   - laparoscopic camera head
   - light cord
   - CO2 tubing
   - Laparoscopic tower equipment
   - Monopolar or bipolar LSC scissors, Harmonic scalpel or hook
   - Suction irrigator
   - Laparoscopic grasper

5. The learner must in a verbal, written or demonstrative mode Identify the number, size and locations of incisions for port placement to facilitate performing laparoscopic hysterectomy
   - intraumbilical (5 or 10 mm)
   - minimum of two accessory ports (5 or 10 mm) placed properly in the lower lateral quadrants, suprapubic position and/or lateral upper abdominal position
Level 2 (Simulated and Clinical Performance)
(Specific Task: laparoscopic hysterectomy)

1. Prepare and position the patient for laparoscopy
2. Describe or place uterine manipulator/sponge stick
3. Able to assemble camera, suction tubing and energy sources/instruments
4. Describe or perform gaining initial access to abdominal cavity and create appropriate pneumoperitoneum
   e. Veress needle
   f. Direct trocar insertion (blind or visual)
   g. Open (Hasson)
5. Visually inspect the pelvis and upper abdomen to survey anatomy
6. Demonstrate proficiency maneuvering laparoscope
7. Describe or demonstrate secondary trocar placement to avoid complications and maintain sufficient spacing for full range of motion, including proper trocar diameters
8. Performs hysterectomy using one of the following:
   - Monopolar scissors
   - Bipolar cauterity with blade or manual scissors
   - Harmonic scalpel
   - Loop ligature
9. Determines whether ovaries are removed or retained
   If retained: identify utero-ovarian ligament
   If removed identify ureters and infundibular pelvic ligament
10. Ligates round ligament with selected surgical instrument
11. Develops broad ligament
12. Creates vesico-uterine reflection/bladder flap
13. Identify, skeletonize and ligate uterine vasculature
14. Determines whether cervix is removed or retained
15. Identify cardinal/utero-sacral ligament complex
16. Utilize vaginal pneumo-occlusion device
17. Describes or positions and retrieves the entire specimen
18. Mechanical morcellation
19. Transvaginal delivery or morcellation
20. Close vaginal cuff
   - Laparoscopic
   - Transvaginal
   - Suture selection
21. Describes or performs irrigating and removing blood and fluid
22. Describes or confirms hemostasis lowering intraabdominal pressure
23. Describes or perform cystoscopy
24. Removes accessory trocars under direct visualization
25. Releases CO2
26. Reverses Trendelenburg
27. Describes or closes appropriate fascial defects after trocar removal
28. Describes or properly closes skin incisions
Laparoscopic Hysterectomy evaluation form (ACOG Simulation Consortium assessment)

Provider # / Name ______________________________  Date ________________
Training Site ________________________________  Grader ________________

Training Level: (Circle One) PGY-1  PGY-2  PGY-3  PGY-4  Staff
Fellow

Scoring Instructions: All scores will be in complete integers. No fractions are given. Participant will receive the full credit if the task is performed satisfactorily and 0 if either not performed or performed unsatisfactorily.

Assess actual performance during simulated salpingectomy:

**PART 1 Patient Set Up:**

7. Time out includes:
   a. Patient identity Yes  No   0 / 1
   b. Antibiotics Yes  No   0 / 1
   c. Blood available Yes  No   0 / 1
8. NGT or OG tube placed Yes  No   0 / 1
9. Anti-slippage pads or preventative measures Yes  No   0 / 1
10. Describes or places the patient in low dorsal lithotomy
    Using Allen stirrups for laparoscopy Yes  No   0 / 1
11. Describes or performs exam under anesthesia Yes  No   0 / 1
12. Describes or drains bladder Yes  No   0 / 1
13. Describes/ places uterine manipulator/colpostomy cup or sponge stick Yes  No   0 / 1

Total: / 9

**PART 2 Instrument Set Up:**

6. Calls for instruments Yes  No   0 / 1
7. Identifies instrumentation Yes  No   0 / 1
8. Correctly assembles instruments Yes  No   0 / 1
9. Performs safety checklist Yes  No   0 / 1
10. Able to assemble camera Yes  No   0 / 1
11. Connects suction tubing Yes  No   0 / 1
12. Connects energy sources Yes  No   0 / 1

Total: / 7
Advanced Surgical Simulation and Endoscopic Surgical Simulation (ASSESS) 
Course 
Instructor Manual

Part 3 Entry/Peritoneal Access

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
11. 
12.

Total: / 3

Part 4: LSC Procedure

7. 
8. 
9. 
10. 
11. 
12.

Total: / 6

Part 5: Hysterectomy Procedure

15. 
16. 

Total: / 6
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<tbody>
<tr>
<td>17. Ligates round ligament with selected surgical instrument</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td>18. Develops broad ligament</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td>19. Creates vesico-uterine reflection/bladder flap</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td>20. Identify, skeletonize and ligate uterine vasculature</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td>21. Determines whether cervix is removed or retained</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td>22. Perform colpotomy</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td></td>
<td>a. Identify cardinal/utero-sacral ligament complex</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Utilize vaginal pneumo-occlusion device</td>
<td></td>
<td></td>
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<tr>
<td>23. Describes or positions and retrieves the entire specimen</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td></td>
<td>a. Mechanical morcellation</td>
<td></td>
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<td></td>
<td>b. Transvaginal delivery or morcellation</td>
<td></td>
<td></td>
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<tr>
<td>24. Close vaginal cuff</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td></td>
<td>a. Laparoscopic</td>
<td></td>
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<tr>
<td></td>
<td>b. Transvaginal</td>
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<td></td>
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<tr>
<td></td>
<td>c. Suture selection</td>
<td></td>
<td></td>
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<tr>
<td>25. Describes or performs irrigating and removing blood and fluid</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td>26. Describes or confirms hemostasis lowering intraabdominal pressure</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td>27. Describes or perform cystoscopy</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td>28. Removes accessory trocars under direct visualization</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td>29. Releases CO2</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td>30. Reverses Trendelenburg</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td>31. Describes or closes appropriate fascial defects after trocar removal</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
<tr>
<td>32. Describes or properly closes skin incisions</td>
<td>Yes</td>
<td>No</td>
<td>0 / 1</td>
</tr>
</tbody>
</table>

Total:

/19

TOTAL CHECK LIST SCORE:

/44
ADD GLOBAL RATING SCALE OF OPERATIVE PERFORMANCE (see addendum 1)

OVERALL SKILL LEVEL

Please rate the performance level of this provider based on the following scale (CIRCLE CHOICE):**

<table>
<thead>
<tr>
<th>Novice</th>
<th>Advanced Beginner</th>
<th>Competent</th>
<th>Proficient</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td>• rigid adherence to taught rules or plans without consideration of unique aspects of the situation</td>
<td>• limited situational awareness</td>
<td>• able to cope with multiple activities, accumulation of information</td>
<td>• holistic view of situation</td>
<td>• transcends reliance on rules, guidelines, and maxims</td>
</tr>
<tr>
<td>• no exercise of discretionary judgment</td>
<td>• all aspects of work treated separately with equal importance</td>
<td>• some perception of actions in relation to goals</td>
<td>• prioritizes importance of aspects</td>
<td>• intuitive grasp of situation based on deep, tacit understanding</td>
</tr>
<tr>
<td></td>
<td>• demonstrates deliberate planning</td>
<td>• perceives deviations from the normal pattern</td>
<td>• employs maxims for guidance, able to adapt to the situation at hand</td>
<td>• uses &quot;analytical approaches&quot; in new situations or when case becomes more complicated</td>
</tr>
</tbody>
</table>

SCORING SUMMARY

PAGE 1 SCORE - Checklist = ____/44

PAGE 2 SCORE

Global Rating Scale = ___/35

Pass/Fail Assessment (circle one) Pass/Fail

PAGE 3 Rating

Overall Skill Level (circle one) Novice/Advance

Beginner/Competent/Proficient/Expert

TOTAL SCORE = ______
Set-up of Limb & Things Model
Removing the belly skin will reveal the uterus in situ, held down by the pelvic ring.

To insert a new uterus, undo the pelvic ring and remove the old uterus.
Insert the new uterus and attach the cardinal and uterosacral ligaments to the pelvic wall. These ligaments can be located at the base of the broad ligament of the uterus attached to the lateral aspect of the uterus near the cervix.
Feed the bowel through the space behind the uterus
Suspend the model into place by popping the pegs through the holes in the broad ligament.

Finally re-attach the pelvic ring.
5. ASSESS Curriculum
Vaginal Hysterectomy:

- Simulator:
  - The simulator used must have the ability to simulate a Vaginal Hysterectomy procedures. Some available options include:
    - Low fidelity constructed vaginal hysterectomy model
    - Miya Model

- Staff/Instructor roles:
  - Staff to play role of assistant surgeon

- Additional equipment:
  - Surgical instruments, suture, headlamp or other portable lighting

- Simulation Instructions:
  - Utilize the simulation curriculum for the scenarios
  - Allow the team to use the Vaginal Hysterectomy Checklist
  - Sample forms for evaluation

- Debriefing:
  - Use the provided checklist/evaluation forms to guide the group through the debrief and review performance
  - Allow all members of the group to practice and demonstrate the vaginal hysterectomy procedure on the simulator

- Evaluation:
  - The participant will be evaluated with the provided evaluation form
  - If the instructor feels that critical errors were made, then the procedure may be conducted again
  - If there are specific elements of the procedure that the instructor feels the participant needs to practice, this can also be done
a. Vaginal Hysterectomy
   i. Choosing the Route of Hysterectomy for Benign Disease ACOG Committee Opinion (instructor can use their chosen Didactic lecture)
   ii. Vaginal Hysterectomy - learning objectives
   iii. Simulation Curriculum – Vaginal Hysterectomy
   iv. Vaginal Hysterectomy evaluation form

   i. Choosing the Route of Hysterectomy for Benign Disease ACOG Committee Opinion (instructor can use their chosen Didactic lecture)

Number 444, November 2009
(Reaffirmed 2011)

Committee on Gynecologic Practice

This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed.

PDF Format

Choosing the Route of Hysterectomy for Benign Disease

ABSTRACT: Hysterectomies are performed vaginally, abdominally, or with laparoscopic or robotic assistance. When choosing the route and method of hysterectomy, the physician should take into consideration how the procedure may be performed most safely and cost-effectively to fulfill the medical needs of the patient. Evidence demonstrates that, in general, vaginal hysterectomy is associated with better outcomes and fewer complications than laparoscopic or
abdominal hysterectomy. When it is not feasible to perform a vaginal hysterectomy, the surgeon must choose between laparoscopic hysterectomy, robot-assisted hysterectomy, or abdominal hysterectomy. Experience with robot-assisted hysterectomy is limited at this time; more data are necessary to determine its role in the performance of hysterectomy. The decision to electively perform a salpingoophorectomy should not be influenced by the chosen route of hysterectomy and is not a contraindication to performing a vaginal hysterectomy.

Hysterectomy is one of the most frequently performed surgical procedures in the United States. During 2000–2004, approximately 3.1 million hysterectomies were performed (approximately 600,000 per year). The most common indications for hysterectomy are symptomatic uterine leiomyomas (40.7%), endometriosis (17.7%), and prolapse (14.5%) (1).

Hysterectomies are performed vaginally, abdominally, or with laparoscopic or robotic assistance. When choosing the route and method of hysterectomy, the physician should take into consideration how the procedure may be performed most safely and cost-effectively to fulfill the medical needs of the patient. Most literature supports the opinion that, when feasible, vaginal hysterectomy is the safest and most cost-effective route by which to remove the uterus (2). However, analysis of U.S. surgical data shows that abdominal hysterectomy is performed in 66% of cases, vaginal hysterectomy in 22% of cases, and laparoscopic hysterectomy in 12% of cases (3).

Factors That Influence the Route of Hysterectomy

Factors that may influence the route of hysterectomy for benign causes include the size and shape of the vagina and uterus; accessibility to the uterus; extent of extrauterine disease; the need for concurrent procedures; surgeon training and experience; available hospital technology, devices, and support; emergency or scheduled cases; and preference of the informed patient.

A narrow pubic arch (less than 90 degrees), a narrow vagina, an undescended immobile uterus, nulliparity, prior cesarean delivery, and enlarged uterus have been proposed by some authors as contraindications for vaginal hysterectomy. However, many nulliparous women and women who have not given birth vaginally have adequate vaginal caliber to allow successful vaginal hysterectomy (4). If the vagina will allow access to divide the uterosacral and cardinal ligaments, uterine mobility usually is improved enough to allow vaginal hysterectomy, even in cases where there is minimal uterine descent (5). When the uterus is enlarged, vaginal hysterectomy often can be accomplished safely by using uterine size reduction techniques such as wedge morcellation, uterine bisection, and intramyometrial coring.
Guidelines incorporating uterine size, mobility, accessibility, and pathology confined to the uterus (no adnexal pathology or known or suspected adhesions) have been proposed as selection criteria for vaginal hysterectomy (6). In a randomized trial, when residents followed specific guidelines for selection and performance of hysterectomy, the percentage of vaginal hysterectomies for benign conditions was more than 90%. Uterine morcellation and other uterine size reduction techniques were only necessary in 11% of cases (7).

Extrauterine disease such as adnexal pathology, severe endometriosis, or adhesions may preclude vaginal hysterectomy. However, in these cases, it may be prudent to visualize the pelvis with a laparoscope before deciding on the route of hysterectomy.

The decision to electively perform a salpingoophorectomy should not be influenced by the chosen route of hysterectomy and is not a contraindication to performing a vaginal hysterectomy. The success of removing the ovaries vaginally varies greatly and is reported to range from 65–97.5% (8–10). In a randomized trial that compared vaginal hysterectomy with bilateral salpingoophorectomy to laparoscopically assisted vaginal hysterectomy with bilateral salpingoophorectomy, there were more complications and increased operating time with the laparoscopic approach (11).

**Outcomes and Complication Rates**

Evidence demonstrates that, in general, vaginal hysterectomy is associated with better outcomes and fewer complications. A Cochrane review of 34 randomized trials of abdominal hysterectomy, laparoscopic hysterectomy, and vaginal hysterectomy, including 4,495 patients, concluded that vaginal hysterectomy has the best outcomes of these three routes. The review also found that when a vaginal hysterectomy is not possible, laparoscopic hysterectomy has advantages (including faster return to normal activity, shorter duration of hospital stays, lower intraoperative blood loss, and fewer wound infections) over abdominal hysterectomy; however, laparoscopic surgery also is associated with longer operating time and higher rates of urinary tract injury (2) (see Box 1).

The authors of one study compared vaginal and abdominal hysterectomy and found that abdominal hysterectomy was associated with 1.7 times more complications, 1.9 times more febrile morbidity, and 2.1 times more blood transfusions than vaginal hysterectomy (12). In another study, when women with enlarged uteri (200–1,300 gm) were randomly assigned surgery by the vaginal or abdominal route, the vaginal procedure resulted in decreased operative time, less febrile morbidity, reduced postoperative narcotic use, and shorter hospital stay (13).
When it is not feasible to perform a vaginal hysterectomy, the surgeon must choose between laparoscopic hysterectomy, robot-assisted hysterectomy, or abdominal hysterectomy. Experience with robot-assisted hysterectomy for benign conditions is currently limited (14). Abdominal hysterectomy is also an important surgical procedure, especially when the vaginal or laparoscopic approach is not appropriate to manage the patient's clinical situation or when facilities cannot support a specific procedure.

Other Considerations

Cost analysis has consistently demonstrated that vaginal hysterectomy is the most cost-effective route (15, 16). Patient preference may influence the route by which the hysterectomy is performed (17). For example, despite the evidence that there is no significant difference in outcome between a supracervical hysterectomy and a total hysterectomy (18), some patients may choose a supracervical hysterectomy. In these cases, a laparoscopic or open abdominal approach is most appropriate.

Conclusions

Listed as follows are the conclusions of the ACOG Committee on Gynecologic Practice:

- Vaginal hysterectomy is the approach of choice whenever feasible, based on its well-documented advantages and lower complication rates.
- The choice of whether to perform prophylactic oophorectomy at the time of hysterectomy is based on the patient's age, risk factors, and informed wishes, but not on the route of hysterectomy.
- Laparoscopic hysterectomy is an alternative to abdominal hysterectomy for those patients in whom a vaginal hysterectomy is not indicated or feasible.
- Experience with robot-assisted hysterectomy is limited at this time; more data are necessary to determine its role in the performance of hysterectomy.

References

3.0 Vaginal Hysterectomy Simulation Setup

Objective:
Creating a Hysterectomy Model for simulation of performing a vaginal hysterectomy (TVH) to achieve the following educational objectives and surgical skills:
1. Identification of anatomical structures
2. Knowledge of steps in TVH including entry into the anterior/posterior cul-de-sac
3. Flow of operation and assessment of forward planning, time and motion
4. Knowledge and use of instruments
5. Use of assistants
7. Knot tying/ligation

Simulator:
- The TVH bony pelvis (flower pot base) can also be used for the TAH simulator.
- Both simulators are initially assembled in the same manner. The inserts and pelvic floor are slightly different for TAH vs TVH.
- The TVH model can be modified to change the complexity of the surgical procedure. (e.g. uterine prolapse or enlarged uterus).

Assembly time: < 1 hr but significantly shorter if multiple simulators made at the same time.

4.0 Basic Scenario Tips

Answer to common questions that come up:
- The purpose of this simulator is to familiarize the learners with the common steps of a vaginal hysterectomy.
- Remember that this is a simulation, nothing can be as exact as real-life.
- Reiterate what is important as the learners goes through the steps of the procedures from start to finish so that they are more familiar with the steps when they actually do these procedures in the operating room.

Common Pitfalls to monitor for:
- Make your vagina, vessels, and ligaments long enough to allow for descensus during TVH procedure
- Do not put too much cotton material when using the Press and Seal as it can prevent proper adherence
- Make sure that the Press and Seal is adhering at least 1/2 way down the vagina (stretchy fabric) to allow simulation of entering the anterior and posterior cul-de-sac.
5.0 Case Flow/ Algorithm and Completion Criteria

PART 1 Patient Set Up
1. Consent the patient properly for the procedure (counsel patient on risks, benefits indications and alternatives to the procedure)
2. Conduct time out: patient identity (name and DOB), allergies, blood available, etc
3. Administer appropriate antibiotics
4. Administer appropriate DVT Prophylaxis
5. Describe the positioning of the patient
   a. dorsal lithotomy using Candy Cane or Allen Stirrups
   b. supine position
6. Describe or perform exam under anesthesia
7. Describe/assess uterine descent
8. Describe anatomic abnormalities such as cystocele/rectocele/uterine prolapse
9. Describe vaginal and abdominal prep and Foley catheter placement

Part 2 Instrument Set Up
1. Identify and call for instruments
2. Describe connection of energy sources and suction
3. Perform safety checklist
4. Demonstrate appropriate placement of Clamps
5. Demonstrate appropriate use of retractors

Part 3 TVH Procedure
1. Describe placement of the patient in Trendelenburg
2. Visually inspect and describe anatomic defects
3. Identify and describe key surgical anatomy
4. Appropriately demonstrate uterine descent
5. Make initial incision with sharp blade in correct place
6. Bladder is dissected off the anterior cervix: Metzenbaum scissors are used to develop a plane between the bladder and the anterior cervix.
7. Appropriately enter anterior and posterior peritoneum
8. Identify uterosacral and cardinal ligaments
9. Identify uterine vessels
10. Correctly clamp, cut, and ligate all ligaments and vessels using appropriate large clamp (e.g., Heaney clamp) and 0 delay absorbable suture
11. Removes uterus ONLY when all ligament s and vessels are ligated and secured
12. Clamp upper pedicles with appropriate large clamp (e.g., Heaney)
13. Doubly ligate upper pedicles using 0 delay absorbable suture
14. Describes hemostasis by evaluating pedicles in a systematic fashion
15. Perform closure of vaginal cuff using figure-of-eight sutures
16. Describe reversing the patient from Trendelenburg

6.0 Post-Simulation Actions:
1. You may utilize the vaginal hysterectomy checklist (See Section 7.0)
2. Review with the learner their performance

MATERIALS (cost approximately $20)
Most of the materials can be reused
Most of the materials can be substituted for similar products and are easily found

Pelvis (Figure 1)

Bony pelvis: 1 plastic flower pot (11 in high x 13 in wide): soft enough to cut with garden shears or utility knife (flower pot pelvis is fully reusable)
(can order this flower pot on-line: GreenhouseMegastore.com)
2 to 4 three-quarter inch long flat head #8 wood screws and metal washers
1-2 pieces of particle board/ plywood (½ in thick, 8 x 16 in)
10 pieces (2.5 – 3 in length) garden wires
Vulva/ perineum (see also Figure 2.11): Felt fabric (8 x 8 in)
Awl – to place holes in the flowerpot
Screwdriver – to screw flower pot to wooden board(s)
Spray adhesive glue – to adhere felt to flower pot
Inexpensive pink fabric to line the flowerpot as parietal peritoneum (optional)
Uterus, tubes and ovaries and vagina (Figure 2)

Uterus/ cervix (Fig. 2.1): pool noodle cut into shape of uterus (2.5 in x 5 in) *(may be used several times)*

Ovaries and utero-ovarian ligament (Fig. 2.2): 2 pieces of 1.5 in diameter foam balls cut into the shape of ovaries *(may be used several times)*; 2 pieces of white yarn (6 in), fold each in half, tie ends together to form loop; sew knotted end to ovary to create ligament

Fallopian tubes (Fig. 2.3): pink felt fabric (3 in x 0.5 in)

Vagina (Fig. 2.10): 4-way stretch performance fabric (used for bathing suits and gym outfits- should be thin) (8 in width x ~12 in length) sewn into a 2.5 - 3 in diameter tube

Vulva/ perineum (Fig. 2.11): Felt fabric (8 x 8 in)

Ligaments (Figure 2)(error on keeping lengths long as excess can be trimmed later)
Cardinal & uterosacral ligaments (Fig. 2.4): 4 pieces of ½ in white elastic bands (~10 in)

Round ligaments (Fig. 2.5): 2 pieces of white yarn (16 in)

Peritoneum (Fig. 2.6): “Press and Seal” wrap

Areolar tissue (Fig. 2.7): cotton fiber
**Vessels (Figure 2)** (error on keeping lengths long as excess can be trimmed later)
Infundibulopelvic ligaments (Fig. 2.8): 2 thick red acrylic yarn (~20-22 in)

Uterine vessels (Fig. 2.9): 2 pieces of about thick red acrylic yard (~18-20 in)

**Additional Equipment (Figure 3)**
1- 2 Vise-Grip tools/ C- clamps (e.g. Quick –Grip Mini Bar clamp)
ASSEMBLY STEPS FOR TVH SIMULATOR

Bony pelvis (Figure 4)
(plastic flower pot, plywood, flat head screws/washers, garden wire, awl, screwdriver)

a. Anterior abdominal wall opening (Fig. 4.1): cut a 10-12 in wide opening on one side of the pot using gardening shears/utility knife. Can use cardboard template.
   a. The inner surface of the pelvis may optionally be lined with pink fabric, attached with spray glue, to mimic the parietal peritoneum.
   b. Bony pelvis (Fig. 4.2): cut a 5 in diameter wide hole on the bottom of the flower pot (pelvic outlet).
   c. To stabilize pelvis (Fig. 4.3): Attach the side of the flowerpot opposite abdominal wall opening with screws and washers on plywood/particle board.
   d. Attachments for ligaments within the pelvis (Fig. 4.4 – 4.5):
      a. Make holes with an awl on the posterior part of the flowerpot (opposite from the “abdominal wall opening”) to correspond to anatomically correct attachments for infundibulopelvic, round, cardinal and uterosacral ligaments and the uterine arteries.
      b. Holes for the round ligament attachments are made on the anterior part of the flower part, at the base of the “abdominal wall opening”.
      c. Loops of metal garden wire are anchored from these holes to allow for attachment of the above ligaments and vessels.
   e. Creation of the pelvic floor (Fig. 4.6):
      a. Attach pink felt to outer base of flower pot
         i. Secure with round ligament loops anteriorly
         ii. Spray base with glue and press felt to base
         iii. (Optional) secure felt further to base with staple gun
   f. Creation of vaginal opening (Fig. 4.7)
      a. Incise base of pelvic floor (felt) overlying 5 in opening in flower pot in a starburst fashion
Uterus & Vagina (Figures 5 – 6)
(pool noodle, 4-way stretch-fabric, spray adhesive)
1. Uterus: cut pool noodle to 4.5-5 in length; shape with serrated knife to form cervix and uterine fundus
   *VIDEO: Creating uterus from pool noodle
2. Vagina: sew the 2 sides of the 4-way stretch-fabric lengthwise to form a tube and then cut into individual pieces (12 in length, 3.5 in width).
3. Attach uterus to vagina:
   *VIDEO: Placing the uterus inside the vagina
   a. Place uterus inside vagina (Fig. 5): Place uterus (pool noodle) completely inside the vagina (fabric tube- finished seam side out) letting the fabric tube extend ~1 in beyond the cervix.
   b. Create vagina and vaginal fornix (Fig. 6): fold the vagina (fabric tube) over on itself so that 2/3 of the uterus (pool noodle) is exposed and 1/3 of the uterus (cervix) is covered by 2 layers of fabric tube.

Uterosacral and Cardinal Ligaments (Figure 7)
1. Attach/ stitch cardinal ligaments and uterosacral ligaments (elastic bands (1/2 in x 10 in)) to anatomically correct sites on the uterus/ vagina.

*VIDEO: Attaching the cardinal ligaments to the uterus & vagina
*VIDEO: Attaching the uterosacral ligaments to the vagina

a. To prevent the uterus (pool noodle) from shredding and to firmly attach ligaments: when stitching, make sure wide, deep bites are taken of the uterus (pool noodle) and the ligaments/ vagina (elastic bands, fabric tube).

b. The elastic allows for enough stretch when the uterus is pulled downwards in vaginal hysterectomy or upwards in abdominal hysterectomy. It also simulates well the texture and tangible properties of the real tissue when being cut and suture ligated.
**Cervix and Cervical Os (Figure 8-9)**
(spray adhesive)

*VIDEO: Adhering the vagina to the uterus and delineating the cervix*

1. Invert/fold vaginal fabric back over the uterine fundus (exposed part of pool noodle)
2. Fold back lower portion of vaginal fabric exposing cervix (pool noodle)
3. Spray glue on the cervix portion of pool noodle (Fig. 8)
4. Unfold vaginal tube fabric back over the cervix and firmly adhere to the cervix and tuck excess fabric tube inside the middle of cervix/ cervical canal and secure with glue and wedge of foam (Fig. 9)
5. Fold vaginal tube fabric back down to expose uterine body again.

**Fallopian Tubes, Ovaries, Utero-Ovarian and Round Ligaments (Figure 10-12)**
(felt, white yarn, foam)

1. Utero-ovarian ligament: fold white yarn in half, tie ends together to form loop
2. Ovary: cut foam into ~ 1.5 in ball.
   a. Attach/ suture utero-ovarian ligament to ovary with suture
3. Fallopian tube: cut tube shape out of pink felt
4. Round ligament: tie a knot at one end of thick yarn
5. Attach/ suture fallopian tubes and adnexa to the uterus
   *VIDEO: Attaching the adnexae to the uterus*
6. Attach/ suture the round ligament(knotted end of thick yarn) to the uterus
   *VIDEO: Attaching the round ligaments to the uterus*
Fig 10 (without vagina attached)

Fig 11 (anterior view)  Fig 12 (posterior view)
Uterine Vessels & Infundibulopelvic Ligament (Figure 13 and 14)
(thick dark red yarn & thick bright red yarn)
1. Uterine vessels: fold 1 piece of dark red yarn in half
2. Attach/ suture the uterine vessels (mid portion of dark red yarn) to the anatomically correct site on the uterus.
   *VIDEO: Attaching the uterine vessels to the uterus
3. Attach infundibulopelvic ligament to ovary by looping bright red yarn through the utero-ovarian ligament

Fig 13 (anterior view)  Fig 14 (close up of adnexa)
Seal Uterus Between 2 Layers of Broad Ligament (Press and Seal)(Figure 15 – 16)

(Press and Seal wrap, cotton fibers)

1. Place a thin layer of cotton fiber over the posterior lower uterine segment/ upper vagina
   a. This will ease vaginal entry into the posterior cul-de-sac during the TVH
2. Place the uterus so that the posterior uterus/ vagina (with the thin layer of cotton fiber) is facing up with the ligaments, adnexa, and vessels spread out in anatomically correct position.
3. Carefully place a piece of Press and Seal wrap (sticky side down) over the entire uterus/ ligaments/ adnexa and press the Press and Seal around the uterus/ ligaments/ adnexa (without adhering the Press and Seal to the work surface)
   a. Make sure the Press and Seal covers at least 1/2 the length of the vagina
4. Carefully flip the entire structure over so that the anterior uterus/ ligaments/ adnexa with the Press and Seal is now facing up (Fig. 15)
5. Repeat the above steps: place a thin layer of cotton fiber over the anterior lower uterine segment/ upper vagina
6. Place a second piece of Press and Seal wrap (sticky side down) over the entire anterior uterus/ ligaments/ adnexa so that the ligaments, vessels and uterus are sealed within the 2 layers of the wrap.
   a. Make sure the round ligaments are wrapped separately from the adnexa to allow the rounds to be attached anteriorly to the bony pelvis later.
7. Press and Seal can be trimmed if needed (Fig. 16)
8. The uterus is now encased within the broad ligament (Press and Seal)

Fig 15 (cotton over anterior lower uterus/ upper vagina)
Uterus Placement within Bony Pelvis (Figure 17)
(complete uterus with vagina, ligaments and adnexa; bony pelvis)
1. Attach the uterus, ligaments, and vessels by tying the ligaments and vessels to the anatomically correct sites (garden wire loops) in the bony pelvis.
Vaginal Attachment to the Introitus (Figure 18 - 19)
(uterus within bony pelvis)

1. Through the felt pelvic floor opening, grasp the distal vagina from the attached uterus. (Fig. 18)
2. Secure vagina to introitus: attach/ suture the distal vagina to the vaginal/pelvic floor opening (felt fabric) with stitches placed circumferentially. (Fig. 19)
   a. To alter the extent of uterine descensus, more or less vaginal length can be made by altering where it is attached to the introitus.
3. Use C-clamps to clamp the simulator to a table to facilitate performance of TVH.
Room Setup and Personnel (Figure 20)
(Simulator, C-clamp, table, drape)

- The TVH simulator can be set up in any room with a table which allows for it to be placed at the appropriate height for the surgeon to sit or stand for the TVH.
- There should be at least 1 assistant for the TVH but it is ideal if there are 2 assistants.
- Place a drape across the TVH simulator to cover the opening of the flower pot.
**Additional Equipment needed: (Figure 21)**

Vaginal hysterectomy operating room tray: tenaculums (Schroeder Single Tooth, Jacobs, etc), clamps (Heaney, Kelly, straight, curve etc.), scalpel, needle driver, forceps (Russian, Debakey, etc), vaginal retractors, weighted speculum, scissors, sutures.
Advanced Surgical Simulation and Endoscopic Surgical Simulation (ASSESS)  
Course  
Instructor Manual

Vaginal Hysterectomy - learning objectives

ACOG Simulations Consortium- Learning Objectives:  
Vaginal Hysterectomy

Level 1- (Declarative knowledge)

1. The learner should be able to list the benefits of a vaginal hysterectomy:
   - Lower morbidity
   - Less pain
   - Rapid recovery
   - Faster return to normal activities
   - Lower consumption of health care dollars and resources.

2. The learner should be able to list indication/ qualifications for vaginal hysterectomy
   - No evidence of malignancy
   - Size less than 12wk size, if greater- whether or not size reduction possible
   - Pathology confined to uterus
   - No evidence of severe endometriosis or adhesive disease
   - Cul-de-sac has to be accessible
   - Relative Contraindications: enlarged uterus, prior pelvic surgery, malignancy, extra-uterine disease such as endometriosis, PID

3. The learner should be able document Exam Under Anesthesia:
   - Confirm no pathology
   - Document degree of descensus with tenaculum on cervix
   - Abnormalities such as cystocele and rectocele
   - Most common location of enterocele: posterior superior vaginal segment
4. The learner should be able to identify anatomic landmarks:

- Border of vaginal rugae
- Uterosacral ligament, Cardinal ligaments, Uterine vessels
- Location of ureter near cervix: in cardinal ligament
- Uterine artery level of anterior broad ligament

5. Basic knowledge:

- Cystotomy: Incidence: 1.2%
- Location of cystotomy: usually well above trigon, not near ureteral orifices
- Rectocele incidence after vaginal hysterectomy 0.1%-16%
- Uterosacral as primary suspension in vaginal vault
- Most common site for bleeding: between utero-ovarian and uterine artery pedicles, second common is posterior vaginal mucosa

ii. Simulation Curriculum – Vaginal Hysterectomy

Preparation:

a. Time out
b. SCDs/DVT prophylaxis
c. Single dose antibiotics prophylaxis
d. Position
   - Stirrups supporting the entire leg are preferable
   - Angles: 90 degrees between thigh and torso, and at the knee
e. Exam under anesthesia
f. Betadine/Ethanol scrub
g. Drape: Self adherent Surgical Drape
Procedure:

a. Decompress bladder- indwelling catheter optional, consider leaving some urine in bladder to help identify cystotomy
b. Inject vasoconstricting agent properly and in appropriate plane
c. Initial incision at point of minimal blood loss, point of decreased vaginal rugae
   *Incision may be made with energy*
d. Bladder must be dissected, deflected and protected
e. Enter peritoneum anteriorly and posteriorly
   *Anterior entry into the peritoneal cavity is not a must for the uterosacral and cardinal ligament ligations.*
   *Posterior entry should be with sharp dissection*
f. Identify uterosacral and cardinal ligaments, and uterine vessels
   *Tag uterosacrals for use in McCalls*
g. Clamp placement and Hemostasis: open clamps widely and slide off cervix or lower uterine corpus before clamping down in an effort to include all vascular collaterals.
   *Before any attempt of delivery of uterus or morcellation, abdomen must be entered both anteriorly and posteriorly. Subsequent to peritoneal entry, all clamp placements must include anterior and posterior edges of the peritoneum to ensure closure of all collaterals with vasculature.*
h. Remove uterus ONLY once all ligaments and vessels are ligated and secured
   - Uterus descends after uterine artery dissection is complete
   - If uterus is small: deliver fundus through anterior or posterior colpotomy
   - If uterus is large: Consider bivalve, Intra-myometrial coring, Morcellation
i. The upper pedicles, which include the cornual end of the fallopian tubes, and round and ovarian ligaments’ are usually clamped at once. In anticipation of too large pedicles, round ligaments can be clamped and ligated separately. *This may also be appropriate to facilitate adnexal removal.*
j. Secure the upper pedicles with a double ligation technique.
k. Evaluate pedicles in clockwise fashion- using sponge on ring forceps
l. Remove ovaries if part of plan
m. Closure of Cuff- Consider McCalls Culdoplasty
   - Incorporate uterosacral ligaments into cuff to reestablish suspensory aspect of vagina
     (so that enterocoele or vaginal vault prolapse does not form)
   - Incorporate full thickness of cuff including peritoneal edge on posterior side
   - Closing the peritoneum is not necessary
n. Packing is not necessary unless Anterior/Posterior repair is formed
o. Indwelling catheter is not necessary unless another procedure was done
p. Oral intake may start as tolerated
7.0 Evaluation Form

Hysterectomy Evaluation: Vaginal

Name _____________________ R1 R2 R3 R4
Evaluator Name ____________________________
Time begin ________________    Time end ________________

PART 1 Patient Set Up Checklist: POINTS (CIRCLE 0 OR 1)

1. Time out includes:
   a. Patient identity Yes No 0 / 1
   b. Allergies Yes No 0 / 1
   c. Blood available Yes No 0 / 1

2. Antibiotics Yes No 0 / 1

3. DVT Prophylaxis Yes No 0 / 1

4. Describes the positioning of the patient
   a. dorsal lithotomy using Candy Cane Yes No 0 / 1
      or Allen Stirrups
   b. supine position Yes No 0 / 1

5. Describes or performs exam under anesthesia Yes No 0 / 1

6. Describes/assess uterine descent Yes No 0 / 1

7. Describes any anatomic abnormalities such as
   a. cystocele/ rectocele/ uterine prolapse Yes No 0 / 1

8. Describes Vaginal and abdominal prep Yes No 0 / 1

9. Place Foley Yes No 0 / 1

Total: __ / 12
### Part 2 Instrument Set Up Checklist:

<table>
<thead>
<tr>
<th>POINTS (CIRCLE 0 OR 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calls for instruments</td>
</tr>
<tr>
<td>Identifies instrumentation</td>
</tr>
<tr>
<td>Describes connection of energy sources and suction</td>
</tr>
<tr>
<td>Performs safety checklist</td>
</tr>
<tr>
<td>Demonstrates appropriate placement of Clamps</td>
</tr>
<tr>
<td>Demonstrates appropriate use of retractors</td>
</tr>
</tbody>
</table>

**Total:** / 6

### Part 3: VH Procedure Checklist

<table>
<thead>
<tr>
<th>POINTS (CIRCLE 0 OR 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describes placement of patient in Trendelenburg</td>
</tr>
<tr>
<td>Visually inspects and describe anatomic defects</td>
</tr>
<tr>
<td>Identifies and describes key surgical anatomy</td>
</tr>
<tr>
<td>Appropriately demonstrates uterine descent</td>
</tr>
<tr>
<td>Makes initial incision with sharp blade in correct place</td>
</tr>
<tr>
<td>Appropriately enters anterior and posterior peritoneum</td>
</tr>
<tr>
<td>Identifies Uterosacral and Cardinal ligaments</td>
</tr>
<tr>
<td>Identifies Uterine vessels</td>
</tr>
<tr>
<td>Correctly clamps, cut, ligates all ligaments &amp; vessels</td>
</tr>
<tr>
<td>Removes uterus ONLY when all ligaments and vessels are ligated and secured</td>
</tr>
<tr>
<td>Clamps upper pedicles</td>
</tr>
<tr>
<td>Doubly ligates upper pedicles</td>
</tr>
<tr>
<td>Describes or performs hemostasis by evaluating pedicles in a systematic fashion</td>
</tr>
<tr>
<td>Performs closure of vaginal cuff</td>
</tr>
</tbody>
</table>
15. Describes reversing the patient from Trendelenburg  Yes  No  0 / 1

VH Global Rating Scale: Attached validated VSSI GRS

Total: ___/15
**Cystoscopy Simulation**

**Preparation**
Station ideally has two residents and one faculty preceptor

Equipment per station:
- One cystoscope (Including a 30 Degree optic, bridge and sheath)
- One 1000 cc bag normal saline
- One IV tubing
- One camera and light cord
- One endoscopy tower

Simulation model (see below):

**Simulation model -inventory/set-up**
One white common balloon and one small rubber ball cored to a size equal to the outer sheath diameter of the cystoscope
Two clips (hemostats or common alligator clips) for ureters.
One 10 cc syringe with a 25 gauge tuberculin needle and blue food coloring for demonstrating ureteral patency
Red Sharpie marker to draw details on bladder model
Tuberculin syringe with 25 gauge needle
Blue food dye
Surgical or egg crate foam sections measuring approximately 12” x 24”
Balloon blown up and marked

Balloon inverted and rubber ball in place

Hemostat/alligator clip placed on outside mimicking a ureteric orifice

Tuberculin syringe injecting blue food dye mimicking a patent ureter demonstration
Two sections of surgical foam or egg crate foam for support of model. Tape to hold model in place.

The model being taped onto surgical foam  Beginning simulation

**Lab Sequence**
1. The intended sequence of events for this lab involves an initial OSATS (observed structured assessment of technical skills):
   a. 5 minutes cystoscopy assembly OSATS and  
   b. 5 minute diagnostic cystoscopy OSATS.
   
   *The faculty should make certain that none of the equipment is damaged and only intervene if damage to the equipment appears eminent.*

**Competency assessment**

A. Cystoscope assembly  
Residents should be able to assemble the cystoscope correctly and identify the parts correctly in less than 5 minutes to be considered competent in this task.  
Correct assembly and obtaining an image is necessary for competency.  
Correctly naming and proper order of assembly will be noted as mastery of this task.

B. Diagnostic cystoscopy  
Residents should be able to  
i. identify both ureteric orifices and identified each of the intra-vesicle pathologic features in less than 5 minutes in order to be considered competent.

Competency is obtained if all intra-vesical landmarks and their location are noted.

Properly rotating the scope to maximize the use of the angled lens and minimize urethral manipulation and torque will be noted as mastery of this task.
Cystoscopy Assembly checklist

NOTE: Before the resident begins assembly remind them to name out loud each piece as they assemble it.

Name____________________________ R1 R2 R3 R4
Evaluator Name__________________________

Time Begin_______     Time End ______

1). Correctly Identifies and names out loud
   Optics/ Lens/ Scope     Yes     No
   Identifies Angle of deflection    Yes   No
   Bridge       Yes   No
   Sheath       Yes   No

2). Assembles correctly:
   Bridge to sheath     Yes   No
   Optics into bridge/sheath    Yes   No

3). Attaches light cord to light post    Yes   No

4). Attaches camera and obtains image    Yes   No

5). Attaches fluid to infusion channel and gets flow through scope tip
   Yes   No

6). Turns off non-employed fluid channels    Yes   No

Time to complete assembly _______Minutes (Max 10 minutes)

Check here if unable to complete assembly______
Diagnostic Cystoscopy checklist

NOTE: Before the resident begins assembly remind them to name out loud each piece as they assemble it.

Resident name: ____________________________  Resident level  R1  R2  R3  R4
Evaluator name: ____________________________

Date__/__/__

Time Begin_______  Time End ______

1. Flush system prior to insertion  Yes  No
2. Inserts scope correctly (atramatic)  Yes  No
3. Rotates lens to view cavity in entirety  Yes  No

4. Identification/Description
   Bladder dome  Yes  No
   Right ureteric orifice  Yes  No
   Demonstrated patency  Yes  No
   Left ureteric orifice  Yes  No
   Demonstrated patency  Yes  No
   Intra-vesical Pathology (when applicable)  Yes  No

5. Time to complete intra-vesical survey ______ mins (max 5 minutes)

Check here if could not complete task______
<table>
<thead>
<tr>
<th>ADENDUM 1</th>
<th>GLOBAL RATING CHECKLIST</th>
<th>Date: ______</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resident name:</strong> _______________</td>
<td>R1</td>
<td>R2</td>
</tr>
<tr>
<td><strong>Evaluator name:</strong> _______________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respect for tissue</strong></td>
<td>Frequently used unnecessary force on tissue or caused damage by inappropriate use of instruments.</td>
<td>Careful handling of tissue, but occasionally caused inadvertent damage.</td>
<td>Consistently handled tissues appropriately with minimal damage.</td>
<td></td>
</tr>
<tr>
<td><strong>Time and motion</strong></td>
<td>Many unnecessary moves.</td>
<td>Efficient time/motion, but some unnecessary moves.</td>
<td>Economy of movement and maximum efficiency.</td>
<td></td>
</tr>
<tr>
<td><strong>Instrument handling</strong></td>
<td>Repeatedly makes tentative or awkward moves with instruments.</td>
<td>Competent use of instruments although occasionally appeared stiff or awkward.</td>
<td>Fluid moves with instruments and no awkwardness.</td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge of instruments</strong></td>
<td>Frequently asked for the wrong instrument or used an inappropriate instrument.</td>
<td>Knew the names of most instruments and used appropriate instrument for the task.</td>
<td>Obviously familiar with the instruments required and their names.</td>
<td></td>
</tr>
<tr>
<td><strong>Use of assistants</strong></td>
<td>Consistently placed assistants poorly or failed to use assistants.</td>
<td>Good use of assistants most of the time.</td>
<td>Strategically used assistant to the best advantage at all times.</td>
<td></td>
</tr>
<tr>
<td><strong>Flow of operation and forward planning</strong></td>
<td>Frequently stopped operating or needed to discuss next move.</td>
<td>Demonstrated ability for forward planning with steady progression of operative procedure.</td>
<td>Obviously planned course of operation with effortless flow from one move to the other.</td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge of specific procedure</strong></td>
<td>Deficient knowledge. Needed specific instruction at most operative steps.</td>
<td>Knew all important aspects of the operation.</td>
<td>Demonstrated familiarity with all aspects of the operation.</td>
<td></td>
</tr>
</tbody>
</table>

Overall, on this task, should this candidate:  Pass _______  Fail _______
ADDENDUM 2
Set-up of Miya Model
Initial assembly instructions:
1. Take crossbar and short screw and screw into stand, loosen or tighten for 360-degree rotation
2. Take pre-assembled pelvis and place into support stand
3. Insert locking screws into place to secure pelvis, loosen or tighten screws for trendelenburg or reverse trendelenburg

Replacement part instructions:
Vulva
1. Unscrew attachments at both sides and posterior screw below the anus-this also screws into sacrospinous ligament plate
2. Un-attach from pelvic support beam
3. Attach new vulva to support beam
4. Screw both side screws in and posterior screw making sure to secure the sacrospinous ligament in place.

Perineum
1. Remove both sides of perineum from pre cut grooves
2. Insert into pre-cut groves at ischial tuberosities so that length of the perineum forms a “flattened U” shape (much like a smile)

Vagina
1. Remove the three front peg and hole attachment points
2. Remove the lateral endopelvic fascia wings from the slots in the pelvis
3. Push the cervix through the vaginal apex and remove
4. Take new vagina and secure the three peg and hole fasteners
5. Endopelvic wings slide into grooves behind ischial spines
6. Insert cervix into vaginal apex

Uterus
1. Slide pegs out from pre-cut grooves in the pelvis
2. Replace with new uterus making sure uterus is oriented so vascular tubes project posteriorly
3. Insert cervix into vaginal apex, the vaginal opening apex fits very tightly around the groove of the cervix

Bladder
1. Remove from grooves at pubic symphysis one on the top and bottom
2. Replace with new bladder, ensuring the urethra opening is at the bottom of the pubic symphysis
Obturator Membranes
1. Using one hand, press on the OM. Using the other hand rotate the OM to the unlocked position, the OM will pop out into the pelvis
2. Place OM into slot and rotate so that it fits into the locking grooves, make sure the Arcus Tendonious Fascia Pelvis lines up with the Ischial spine, there is a Right and Left OM

Sacrospinous Ligament (with vulva removed)
1. Remove SSL from pegs (should already have screw removed)
2. Place new SSL onto pegs
3. After replacing the vulva, insert posterior screw through vulva, securing SSL plate into place
Completion Requirements:

- Each provider must participate in a simulation for each of the procedures
- Evaluation forms will be filled out for each covered procedure

Participant Course Reviews:

- After completion of the course, all learners must complete the ASSESS Course Review form in order to receive credit for attending the course.
9. References


Choosing Route of Hysterectomy for Benign Disease. ACOG Practice Bulletin Number 444, November 2009.