ACOG Learning Objectives: Anterior Colporrhaphy

Chi Chiung Grace Chen, MD MHS; Michael Fialkow, MD, MPH; Douglas Miyazaki, MD; Christine Vaccaro, DO; Jessie Ykimoff, MS4

Learning Objectives
- Explain indications and goals for anterior colporrhaphy.
- Define pertinent vaginal anatomy and clinical presentation of anterior and posterior vaginal prolapse.
- Describe technique for anterior and posterior colporrhaphy.
- Recognize and prevent complications.
- List expected results after anterior and posterior colporrhaphy

Level 1: Declarative Knowledge
1. Basic knowledge:
   - Normal support for the vagina and pelvic organs is provided by the attachment of pelvic muscles and connective tissues.
   - Anterior vaginal wall prolapse is most commonly due to bladder prolapse and often associated with apical prolapse.
   - Higher-stage prolapse may also involve uterine or vaginal apex descent. Other defects may require additional procedures. Anterior enteroceles are rare.
   - Anterior prolapse can adversely affect quality of life, sexuality, voiding function, and urinary continence.
2. The learner should be able to define clinical and physical presentation of a cystocele, including using the Pelvic Organ Prolapse Quantification (POP-Q) System.
   - Common symptoms of cystocele include vaginal bulge or pressure and voiding difficulty, e.g. incomplete emptying or incontinence.
   - Physical Exam: When patient performs Valsalva in lithotomy, the anterior vaginal wall descends into vaginal canal.
     i. Pelvic Organ Prolapse Quantification (POP-Q) System is a standardized grading system to measure degree of prolapse.
3. The learner should be able to list the required diagnostic testing prior to anterior colporrhaphy.
   - Urinalysis to assess for concurrent UTI
   - Postvoid residual volume to ensure complete bladder emptying.
   - If concurrent urinary incontinence, urodynamics may be indicated to further investigate causes and if treatment is indicated.
   - Concurrent stress urinary incontinence may require placement of a sling immediately after the anterior colporrhaphy. Assessment for stress urinary incontinence should be considered in each patient prior to anterior repair.
   - In cases of severe prolapse, patients may have occult stress incontinence. Assess for this by reducing the prolapse (pessary, retractor, packing) and testing for urinary leakage with cough or Valsalva.
   - Patients with vaginal atrophy should be considered for vaginal estrogen or other vaginal epithelial building therapies.
4. The learner should be able to document Exam Under Anesthesia:
   - Confirm no additional pathology
   - Document degree of prolapse via POP-Q system
   - Describe pelvic floor and apical support.
5. The learner should be able to describe the dissection techniques for anterior colporrhaphy. (see below in procedure)
ACOG Learning Objectives: Anterior Colporrhaphy

6. The learner should be able to recognize and prevent complications:
   - Cystotomy or ureteral compromise (risk 0-2%)
   - Intravesical or urethral suture placement.
   - Urinary tract infection
   - Voiding dysfunction
   - Fistula formation
   - Blood loss or hematoma
   - De novo stress incontinence in 15-59% after anterior vaginal prolapse repair.
   - De novo dyspareunia in up to 18%, but in general dyspareunia rates go down after prolapse surgery.

7. The learner should be able to identify risk factors for prolapse recurrence.

8. The learner should be able to discuss the benefits and risks of using synthetic mesh during repair:
   - Mesh may improve anatomic outcomes, but no improved subjective outcomes.
   - Both repairs have about 80-95% subjective success rates.
   - No difference in quality of life or dyspareunia
   - Disadvantages of mesh include:
     i. Increased time in the operating room, increased estimated blood loss,
     ii. Mesh erosion 4-10%; surgery for erosion 6.3%
     iii. Total reoperation rate is doubled compared with non-mesh repair

Level 2: Simulated and Clinical Performance

6. Preparation:
   a. Mechanical bowel prep is not necessary
   b. Time out
   c. SCDs/DVT prophylaxis
   d. Single dose antibiotics prophylaxis
   e. Anesthesia
   f. Position
      o Stirrups supporting the entire leg or candy canes are both appropriate
      o Angles: At least 60 degrees between thigh and torso, and 90 degrees at the knee
      o Buttock extending slightly over the edge of the table
      o Trendelenburg
   g. Exam under anesthesia
   h. Antiseptic scrub
   i. Drape: Self adherent Surgical Drape
   j. Sit or stand. Surgeons who sit should consider elevating the chair/stool and using steps for their own feet so the assistants don't have to bend down

7. Procedure:
   - With patient in dorsal lithotomy, place transurethral Foley catheter for recognition of bladder neck and urethrovesical junction.
   - Use two Allis clamps to grasp the vaginal epithelium at the urethrovesical junction and at the vaginal apex.
   - Inject hydrodissection solution subepithelially (usually a mixture of local anesthetic, saline and vasoconstrictor)
   - With a scalpel, incise the vaginal epithelium between the two Allis clamps, from the urethrovesical junction to the apex.
   - Dissect the underlying vaginal fibromuscular tissue from the epithelium to the margins of the dissection bilaterally.
ACOG Learning Objectives: Anterior Colporrhaphy

a. Technique: Place an Allis clamp on the epithelial edge. Using your forefinger as traction, use Metzenbaum scissors to carefully dissect the fibromuscular layer away.
b. An assistant can maintain traction medially on the underlying muscularis tissue layer with atraumatic forceps (Providing traction and counter-traction is very important for a clean dissection)

- With absorbable suture, plicate the prolapsed fibromuscular layer in one or two mattress layers.
  a. Wide, shallow bites should be taken bilaterally, starting at the pubic rami so that the prolapsed tissue can be reduced without injury to the underlying bladder.
  b. If the prolapse is particularly large, consider imbricating in two layers or place a purse string suture first to reduce some of the prolapse.
- Trim excess vaginal epithelium and reapproximate the vaginal epithelium with delayed absorbable suture.
- Perform cystoscopy for evaluation of bladder integrity and ureteral patency.
- Often anti-incontinence operations are also required. Any sling procedure should be performed through a separate midurethral incision after the cystocele is repaired to minimize potential shifting of the incontinence synthetic mesh from the midurethral position.

- Packing is optional
- Oral intake may start as tolerated
- Same day discharge is optional

References:


ACOG Learning Objectives: Anterior Colporrhaphy

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Anterior Colporrhaphy Steps

Procedure

1. With patient in dorsal lithotomy, place transurethral Foley catheter for recognition of bladder neck and urethrovesical junction.
2. Use two Allis clamps to grasp the vaginal epithelium at the urethrovesical junction and at the vaginal apex.
3. Inject hydrodissection solution subepithelially (usually a mixture of local anesthetic, saline and vasoconstrictor)
4. With a scalpel, incise the vaginal epithelium between the two Allis clamps, from the urethrovesical junction to the apex.
5. Dissect the underlying vaginal fibromuscular tissue from the epithelium to the margins of the dissection bilaterally.
   a. Technique: Place an Allis clamp on the epithelial edge. Using your forefinger as traction, use Metzenbaum scissors to carefully dissect the fibromuscular layer away.
   b. An assistant can maintain traction medially on the underlying muscularis tissue layer with atraumatic forceps (Providing traction and counter-traction is very important for a clean dissection)
6. With absorbable suture, plicate the prolapsed fibromuscular layer in one or two mattress layers.
   a. Wide, shallow bites should be taken bilaterally, starting at the pubic rami so that the prolapsed tissue can be reduced without injury to the underlying bladder.
   b. If the prolapse is particularly large, consider imbricating in two layers or place a purse string suture first to reduce some of the prolapse.
7. Trim excess vaginal epithelium and reapproximate the vaginal epithelium with delayed absorbable suture.
8. **Perform cystoscopy for evaluation of bladder integrity and ureteral patency.**
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ANTERIOR COLPORRHAPHY ASSESSMENT

Chi Chiung Grace Chen MD MHS, Michael Fialkow, MD, MPH, Christine Vaccaro, DO, Douglas Miyazaki MD, Jessie Ykimoff MS4

Part 1: Knowledge

1. List benefits of anterior colporrhaphy 0 / 1
   (0) Unable to list
   (1) Able to list several

2. List indications/qualifications for anterior colporrhaphy 0 / 1
   (0) Unable to list
   (1) Able to list several

3. Identify anatomic landmarks 0 / 1
   (0) Unable to identify
   (1) Able to identify

4. List possible surgical complications and incidence rates 0 / 1
   (0) Unable to list
   (1) Able to list several

5. Describe outcome differences between native repair and synthetic mesh 0 / 1
   (0) Unable to describe
   (1) Able to describe

Part 2: Simulated and Clinical Performance:

6. Preparation:
   a. Time out
      Name 0 / 1
      Antibiotics 0 / 1
      Allergies 0 / 1
      Procedure to be performed 0 / 1
   b. SCDs/DVT prophylaxis 0 / 1
   c. Antibiotics 0 / 1
   d. Position/Stirrups/Angle 0 / 1
   e. Exam under anesthesia 0 / 1
   f. Scrub 0 / 1
   g. Drape 0 / 1

7. Procedure:
   a. Injection of vasoconstriction agent and in appropriate plane 0 / 1
   b. Appropriate placement of initial incision 0 / 1
   c. Identify anatomic landmarks of dissection 0 / 1
   d. Proper dissection of the epithelium with traction maintained 0 / 1
   e. Sufficient dissection bilaterally to the margins 0 / 1
   f. Effective plication of fibromuscular layer, avoiding deep bites 0 / 1
   g. Effective knot tying with plication, avoiding excessive tension 0 / 1
   h. Appropriate trimming of excess epithelium and closure 0 / 1
   i. Evaluate for hemostasis 0 / 1
   j. Cystoscopy 0 / 1
**ACOG Simulation Working Group**  
**ANTERIOR COLPORRHAPHY ASSESSMENT**  
**Global Rating Scale of Operative Performance**

### Respect for tissue

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
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</thead>
<tbody>
<tr>
<td>Often 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 tissue appropriately, with minimal damage</td>
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</table>

### Time and motion

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Many unnecessary moves</td>
<td>Efficient time and motion, but some unnecessary moves</td>
<td>Economy of movement and maximum efficiency</td>
<td></td>
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</table>

### Instrument handling

<table>
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<tr>
<th>1</th>
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<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<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>
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</table>

### Knowledge of instruments

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<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 instruments required and their names</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Use of assistants

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistently placed assistants poorly or failed to use assistants</td>
<td>Good use of assistants most of the time</td>
<td>Strategically used assistants to the best advantage at all times</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Flow of operation and forward planning

<table>
<thead>
<tr>
<th>1</th>
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<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<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 next</td>
<td></td>
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</table>

### Knowledge of specific procedure

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<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>
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</table>
# ACOG Simulation Working Group

## ANTERIOR COLPORRHAPHY ASSESSMENT

### Vaginal Surgical Skills Index

#### Initial Inspection

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
<th>Score</th>
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<th>Description</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Incomplete and unsystematic inspection of relevant pelvic and vaginal structures</td>
<td>1</td>
<td>Partially complete and unsystematic inspection of relevant pelvic and vaginal structures</td>
<td>2</td>
<td>Complete but unsystematic inspection of relevant pelvic and vaginal structures</td>
<td>3</td>
<td>Complete and somewhat systematic inspection of relevant pelvic and vaginal structures</td>
</tr>
</tbody>
</table>

#### Incision

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
<th>Score</th>
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<th>Description</th>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Does not perform appropriate incision(s) safely and does not use incision(s) effectively ensuring optimal exposure</td>
<td>1</td>
<td>Incompletely performs appropriate incision(s) safely and does not use incision(s) effectively ensuring optimal exposure</td>
<td>2</td>
<td>Performs appropriate incision(s) safely but does not use incision(s) effectively ensuring optimal exposure</td>
<td>3</td>
<td>Performs appropriate incision(s) safely and partially uses incision(s) effectively ensuring optimal exposure</td>
</tr>
</tbody>
</table>

#### Maintenance of Visibility

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
<th>Score</th>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Almost never or never obtains appropriate exposure</td>
<td>1</td>
<td>A few times (less than half the time) obtains appropriate exposure</td>
<td>2</td>
<td>Sometimes (about half the time) obtains appropriate exposure</td>
<td>3</td>
<td>Most time (more than half the time) obtains appropriate exposure</td>
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</tbody>
</table>

#### Use of Assistances

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Almost never or never strategically used assistant(s) to the best advantage</td>
<td>1</td>
<td>A few times (less than half the time) strategically uses assistant(s) to the best advantage</td>
<td>2</td>
<td>Sometimes (about half the time) strategically uses assistant(s) to the best advantage</td>
<td>3</td>
<td>Most time (more than half the time) strategically uses assistant(s) to the best advantage</td>
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#### Knowledge of Instruments

<table>
<thead>
<tr>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>Almost never or never uses and is familiar with correct instruments</td>
<td>1</td>
<td>A few times (less than half the time) uses and is familiar with correct instruments</td>
<td>2</td>
<td>Sometimes (about half the time) uses and is familiar with correct instruments</td>
<td>3</td>
<td>Most time (more than half the time) uses and is familiar with correct instruments</td>
</tr>
</tbody>
</table>
### Tissue and Instrument Handling

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Almost never or never appropriately handles tissue and instruments</td>
<td>A few times (less than half the time) appropriately handles tissue and instruments</td>
<td>Sometimes (about half the time) handles tissue and instruments appropriately</td>
<td>Most time (more than half the time) handles tissue and instruments appropriately</td>
<td>Almost always or always observed handles tissue and instruments appropriately</td>
<td>Not Observed</td>
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### Electro-Surgery

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Almost never or never uses electro-surgery safely and efficiently</td>
<td>A few times (less than half the time) uses electro-surgery safely and efficiently</td>
<td>Sometimes (about half the time) uses electro-surgery safely and efficiently</td>
<td>Most time (more than half the time) uses electro-surgery safely and efficiently</td>
<td>Almost always or always uses electro-surgery safely and efficiently</td>
<td>Not Observed</td>
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### Knot Tying / Ligation

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<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>Not Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost never or never quickly and correctly performs suture ligation and knot tying</td>
<td>A few times (less than half the time) quickly and correctly performs suture ligation and knot tying</td>
<td>Sometimes (about half the time) quickly and correctly performs suture ligation and knot tying</td>
<td>Most time (more than half the time) quickly and correctly performs suture ligation and knot tying</td>
<td>Almost always or always observed quickly and correctly performs suture ligation and knot tying</td>
<td>Not Observed</td>
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</table>

### Hemostasis

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<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>Not Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost never or never exposes bleeders and uses correct technique to obtain hemostasis safely and effectively</td>
<td>A few times (less than half the time) exposes bleeders and uses correct technique to obtain hemostasis safely and effectively</td>
<td>Sometimes (about half the time) exposes bleeders and uses correct technique to obtain hemostasis safely and effectively</td>
<td>Most time (more than half the time) exposes bleeders and uses correct technique to obtain hemostasis safely and effectively</td>
<td>Almost always or always exposes bleeders and uses correct technique to obtain hemostasis safely and effectively</td>
<td>Not Observed</td>
</tr>
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### Procedure Completion

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<thead>
<tr>
<th>0</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>Not Observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost never or never completely removes fluid and debris and thoroughly inspects for bleeding</td>
<td>A few times (less than half the time) completely removes fluid and debris and thoroughly inspects for bleeding</td>
<td>Sometimes (about half the time) completely removes fluid and debris and thoroughly inspects for bleeding</td>
<td>Most time (more than half the time) completely removes fluid and debris and thoroughly inspects for bleeding</td>
<td>Almost always or always observed completely removes fluid and debris and thoroughly inspects for bleeding</td>
<td>Not Observed</td>
</tr>
</tbody>
</table>
ACOG Simulation Working Group
ANTERIOR COLPORRHAPHY ASSESSMENT

<table>
<thead>
<tr>
<th>Time and Motion</th>
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<th>1</th>
<th>2</th>
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<th>4</th>
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</thead>
<tbody>
<tr>
<td>Almost never or never efficiently performs movements with no awkward or unnecessary moves</td>
<td>A few times (less than half the time) efficiently performs movements with no awkward or unnecessary moves</td>
<td>Sometimes (about half the time) efficiently performs movements with no awkward or unnecessary moves</td>
<td>Most time (more than half the time) efficiently performs movements with no awkward or unnecessary moves</td>
<td>Not Almost always or always observed efficiently performs movements with no awkward or unnecessary bleeding</td>
<td>Not Observed</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Flow of Operation and Forward Planning</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost never or never demonstrates forward planning allowing for proper flow of the procedure</td>
<td>A few times (less than half the time) demonstrates forward planning allowing for proper flow of the procedure</td>
<td>Sometimes (about half the time) demonstrates forward planning allowing for proper flow of the procedure</td>
<td>Most time (more than half the time) demonstrates forward planning allowing for proper flow of the procedure</td>
<td>Almost always or always demonstrates forward planning allowing for proper flow of the procedure</td>
<td>Not Observed</td>
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<table>
<thead>
<tr>
<th>Knowledge of Specific Procedure</th>
<th>0</th>
<th>1</th>
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<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>Almost never or never demonstrates familiarity with all aspects of the operation</td>
<td>A few times (less than half the time) demonstrated familiarity with all aspects of the operation</td>
<td>Sometimes (about half the time) demonstrates familiarity with all aspects of the operation</td>
<td>Most time (more than half the time) demonstrates familiarity with all aspects of the operation</td>
<td>Not Almost always or always observed demonstrates familiarity with all aspects of the operation</td>
<td>Not Observed</td>
</tr>
</tbody>
</table>

Overall, is the trainee competent to safely perform this task unsupervised: NO YES

Chi Chiung Grace Chen, MD; Abner Korn, MD; Christopher Klingele, MD; Matthew D. Barber, MD, MHS; Marie Fidela R. Paraiso, MD; Mark D. Walters, MD; J. Eric Jelovsek, MD