

**EDUCATIONAL OBJECTIVES**  
**FELLOWSHIP IN MINIMALLY INVASIVE GYNECOLOGIC SURGERY (FMIGS)**

**Table of Contents**

Part 1: Medical Knowledge

1. Abdominal and Pelvic Anatomy .....	2
2. Menstrual Cycle Physiology.....	2-3
3. Abnormal Uterine Bleeding.....	3
4. Uterine Fibroids.....	4
5. Endometriosis.....	4-5
6. Adnexal Pathology.....	5-6
7. Acute Pelvic Pain .....	6-7
8. Chronic Pelvic Pain .....	7-8
9. Congenital Anomalies of the Urogenital Tract.....	8-9
10. Risk Reducing Surgeries.....	9-10
11. Surgery in Special Populations .....	10-12
12. Pelvic Floor Disorders.....	12-13
13. Perioperative Management .....	13-14
14. Diagnosis and Management of Surgical Complications Identified in Postoperative Period....	14-15

Part 2: Procedural Competencies

15. Principles of Energy Sources .....	15
16. Hysteroscopy.....	15-16
17. Essentials of Laparoscopy.....	16-17
18. Essentials of Robotic Surgery .....	18
19. Essentials of Vaginal Surgery.....	19
20. Tissue Retrieval and Extraction .....	19-20
21. Adnexal Surgery.....	20-21
22. Surgical Treatment of Congenital Anomalies of the Reproductive Tract.....	21-22
23. Hysterectomy and Trachelectomy .....	22-23
24. Myomectomy .....	23-24
25. Retroperitoneal Dissection (Resection of Endometriosis including Deeply Infiltrative, Ureterolysis Presacral Neurectomy) .....	24-25
26. Surgical Procedures for Treatment of Urinary & Fecal Incontinence, Pelvic Floor Prolapse .....	25-26
27. Urinary Tract Surgery Related to MIGS Surgeon.....	26-27
28. Gastrointestinal Tract Surgery Related to MIGS Surgeon.....	27-28
29. Intraoperative Identification and Management of Visceral Injuries and Bleeding.....	28

Part 3: Professional and Ethical Behavior

30. Professionalism, Ethics, Accountability and Communication .....	29
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Part 4: Evidence Based Medicine

31. Research Design, Analysis and Interpretation .....	29-30
32. Scientific Dissemination.....	30

## 1. ABDOMINAL AND PELVIC ANATOMY

### 1. Physiology/Pathophysiology: (MK)

- a. Demonstrate knowledge of abdominal and pelvic anatomy including genital, urinary, gastrointestinal, musculoskeletal, and bony structures.
- b. Describe the vascular, lymphatic, and nerve supply to each of the pelvic organs and structures.
- c. Describe the anatomy of the anterior abdominal wall, including nerve and vascular supply.
- d. Describe the abdominal and pelvic viscera, their anatomic relationships to one another, and to the other structures within the pelvis.
- e. Describe pelvic support as relates to uterovaginal prolapse and urinary incontinence.
- f. Interpret normal and abnormal reproductive and urinary tract anatomy.
- g. Identify the anatomy and borders of pelvic and retroperitoneal spaces.
- h. Describe how variations and abnormalities of anatomic development can contribute to disease states and/or impact urogenital function.
- i. Describe the embryological origin of the pelvic viscera as relates to congenital anomalies.
- j. Describe changes in pelvic anatomy throughout the menstrual cycle.
- k. Describe changes in pelvic anatomy as it relates to sexual function/response cycle.

### 2. Evaluation: (PC, MK)

- a. **History:** Elicit and identify patient history which may suggest variations and alterations in normal anatomy.
- b. **Physical exam:** Interpret exam findings which would indicate normal and abnormal anatomy.
- c. **Diagnostic tests:**
  - i. Interpret imaging results which indicate normal and pathologic conditions.
  - ii. Understand appropriate imaging used to identify anatomic variations which impact medical and surgical management.

## 2. MENSTRUAL CYCLE PHYSIOLOGY

### 1. Physiology/Pathophysiology: (MK)

- a. Demonstrate an understanding of the normal menstrual cycle, including follicular phase, ovulation and luteal phase.
- b. Describe the histologic changes of the endometrium during the menstrual cycle.
- c. Describe the physiologic changes of the cervix and vagina during the menstrual cycle.
- d. Demonstrate an understanding of how the phases of the normal menstrual cycle impact on the timing of medical and surgical interventions and treatments.
- e. Demonstrate an understanding of the physiologic changes in the normal menstrual cycle that occur over the reproductive lifespan.

### 2. Evaluation: (MK, PC)

- a. **History:**
  - i. Elicit a comprehensive menstrual history, including menarche length, duration, flow, and regularity.

- b. **Physical exam:**
    - i. Perform a focused, age-appropriate physical exam, including assessment of secondary sex characteristics, abdominal exam, genital/rectal exam.
  - c. **Diagnostic tests:**
    - i. Interpret lab and imaging studies indicating abnormalities of menstrual function, such as blood tests, ultrasound, and endometrial pathology.
  - d. **Differential diagnosis:**
    - i. For abnormal bleeding patterns, review [Section 3, Abnormal Uterine Bleeding]
- 3. Other considerations: (MK, PC, PBLI, ICS)**
- i. Understand the impact of abnormalities of menstrual function on women's health, reproduction, and quality of life.

### 3. ABNORMAL UTERINE BLEEDING

#### 1. Physiology/Pathophysiology: (MK)

- a. Describe the normal menstrual cycle and define abnormal uterine bleeding.

#### 2. Evaluation: (MK, PC)

##### a. History:

- i. Elicit a comprehensive menstrual and medical history. See [Section 2, Menstrual Cycle Physiology].

##### b. Physical exam:

- i. Perform a focused physical exam, including assessment of markers of reproductive hormone abnormality.

##### c. Diagnostic tests:

- i. Order appropriate laboratory tests and imaging, such as cervical screening, ultrasound.
- ii. Perform endometrial evaluation as indicated, such as endometrial biopsy and/or hysteroscopy.

##### d. Differential diagnosis:

- i. Form a differential diagnosis based on history, exam, and diagnostic testing, using a classification system such as PALM-COEIN.

#### 3. Management: (MK, PC, PBLI, ICS, SBP)

##### a. Non-surgical:

- i. Discuss non-surgical treatments and counsel patients regarding the risks, benefits and alternatives of medical therapies.

##### b. Procedural:

- i. Discuss interventional treatments, such as myomectomy, hysterectomy, endometrial ablation, and interventional radiology procedures, including risks, benefits, and cost-effectiveness.

#### 4. Other considerations: (MK, PC, PBLI, ICS, SBP)

- a. Review fertility-sparing options, including risks and benefits.
- b. Identify comorbidities, such as morbid obesity, smoking, cardiac disease and chronic pelvic pain, that impact treatment options.
- c. In patients who have failed treatment, determine why a chosen treatment may not have been successful, identify potential misdiagnosis, and counsel patient about alternative options.
- d. Consider consultation when appropriate, such as Hematology, Gynecologic Oncology.

#### 4. UTERINE FIBROIDS

##### 1. Physiology/Pathophysiology: (MK)

- a. Describe current theories of the pathophysiology of fibroids.
- b. Describe the relationship between symptoms, location, and size of fibroids,
- c. Describe the effects of fibroids on fertility and pregnancy.

##### 2. Evaluation: (MK, PC, PBLI, ICS, SBP)

###### a. History:

- i. Elicit a comprehensive medical and menstrual history, including reproductive history.
- ii. Identify factors that impact treatment options, such as desire for fertility and uterine preservation, comorbidities, risk factors for endometrial and other uterine cancers such as leiomyosarcoma.

###### b. Physical exam:

- i. Perform a focused physical exam, including uterine size, location of fibroids, uterine mobility and tenderness.

###### c. Diagnostic tests:

- i. Order appropriate laboratory tests, imaging and endometrial evaluation, such as pelvic ultrasound, MRI, endometrial biopsy and/or hysteroscopy as indicated.

###### d. Differential diagnosis:

- i. Form a differential diagnosis based on history, exam, and diagnostic testing.

##### 3. Management: (MK, PC, PBLI, ICS, SBP)

###### a. Non-surgical:

- i. Discuss medical therapies, such as hormonal options, NSAIDs, tranexamic acid; and counsel patients regarding risks, benefits, and alternatives.

###### b. Procedural:

- i. Discuss risks, benefits, and cost-effectiveness of surgical and non-surgical interventional procedures such as myomectomy, hysterectomy, uterine artery embolization, MRI-guided ultrasound focused fibroid ablation, and radiofrequency ablation.

##### 4. Other considerations: (MK, PC, PBLI, ICS, SBP)

- a. Review fertility-sparing options, including risks, benefits, and alternatives.
- b. Summarize and counsel patients regarding the variants of uterine fibroids and risk of malignancy.
- c. Consider consultation with other specialists when appropriate, such as Gynecologic Oncology and Interventional Radiology.
- d. In patients who have failed treatment, determine why a chosen treatment may not have been successful, identify potential misdiagnosis, and counsel patient about alternative options.

#### 5. ENDOMETRIOSIS

##### 1. Physiology/Pathophysiology: (MK)

- a. Describe the pathogenesis, symptomatology, visual appearance, various subtypes (such as superficial, deeply infiltrative and ovarian, typical and atypical) and different methods of classification of endometriosis.
- b. Explain the effects of endometriosis on fertility and pain.

- c. Describe the incidence of and risk factors for malignant transformation of endometriosis.
- 2. Evaluation: (MK, PC)**
- a. **History:**
    - i. Elicit a comprehensive medical and menstrual history, including symptoms of pain such as dysmenorrhea, noncyclic pelvic pain, dyspareunia, dysuria, and dyschezia, subfertility, and other symptoms associated with endometriosis
  - b. **Physical exam:**
    - i. Perform a focused physical examination, including evaluation of pelvic pain and findings suggestive of endometriosis.
  - c. **Diagnostic tests:**
    - i. Order appropriate laboratory tests and imaging, such as pelvic ultrasound and/or MRI.
  - d. **Differential diagnosis:**
    - i. Form a differential diagnosis based on history, exam, and diagnostic testing
    - ii. Recognize that many patients with chronic pelvic pain have multiple etiologies of pain [Section 8, Chronic Pelvic Pain].
- 3. Management: (MK, PC, PBLI, ICS, SBP)**
- a. **Non-surgical:**
    - i. Counsel patients regarding medical therapies, such as NSAIDs, hormonal suppression and their various routes of administration.
    - ii. Discuss management of chronic pain [Section 8, Chronic Pelvic Pain].
  - b. **Procedural:**
    - i. Describe current evidence-based surgical treatment options such as excision and/or ablation of endometriosis, adnexal surgery including optimal performance of ovarian cystectomy, hysterectomy, presacral neurectomy, and management of endometriosis involving bowel, bladder and other distant organs.
    - ii. Describe and counsel patients on the role of post-surgical medical therapy.
  - c. **Other considerations: (MK, PC, PBLI, ICS, SBP)**
    - i. Review the impact of fertility desires on treatment options including the potential impact of treatment options on ovarian reserve.
    - ii. Consider the long-term cost effectiveness and overall health impact to patient of treating a chronic illness.
    - iii. Consider consultation with other specialists when appropriate, such as Reproductive Endocrinology and Infertility, Urology and/or Colorectal surgery.
    - iv. In patients who have failed treatment, identify possible reasons why a chosen treatment may not have been successful, identify potential misdiagnosis, and counsel about alternative options.

## **6. ADNEXAL PATHOLOGY**

### **1. Physiology/Pathophysiology: (MK)**

- a. Describe the etiology of physiologic and pathologic adnexal masses, including association with age, reproductive status, and pregnancy status.
- b. Describe risk factors for and symptoms of ovarian remnant syndrome.
- c. Describe risk factors for ovarian and fallopian tube cancers.

**2. Evaluation: (MK, PC)****a. History:**

- i. Elicit a comprehensive medical and menstrual history, including family history of ovarian, breast, uterine, and colon cancer.

**b. Physical exam:**

- i. Perform a focused physical exam, including physical exam markers of reproductive hormone abnormality and abdominal, pelvic, and rectovaginal exam with evaluation for adnexal mass, tenderness, mobility.

**c. Diagnostic tests:**

- iii. Order appropriate laboratory tests and imaging, such as serum tumor markers, pelvic ultrasound, CT scan and/or MRI.

**b. Differential diagnosis:**

- i. Form a differential diagnosis based on history, exam, and diagnostic testing

**3. Management: (MK, PC, PBLI, ICS, SBP)****a. Non-surgical:****i. Observation**

- 1. Identify appropriate candidates for expectant management of adnexal masses and counsel patients regarding the role of expectant management.

**ii. Medical management**

- 1. Discuss medical therapies, such as antibiotic therapy for tubo-ovarian abscess, including risks, benefits, and alternatives.

**b. Procedural:**

- i. Discuss surgical interventions for adnexal masses, such as cystectomy and oophorectomy, including risks (such as risk of malignancy and impact on ovarian reserve), benefits, and cost-effectiveness.

- ii. Counsel patients regarding potential intraoperative findings and postoperative outcomes including pathology, recurrence risk, and subsequent management.

**4. Other considerations: (MK, PC, PBLI, ICS, SBP)**

- a. Assess the level of urgency for surgery and triage as appropriate.
- b. Discuss the indications for and timing of surgical interventions for adnexal masses in pregnancy, including postoperative care such as progesterone replacement in the first trimester.
- c. Review fertility-sparing options, including risks, benefits, and alternatives.
- d. Consider consultation with other specialists when appropriate, such as Gynecologic Oncology.

**7. ACUTE PELVIC PAIN****1. Physiology/Pathophysiology: (MK)**

- a. Describe the pathophysiology of acute pain versus chronic pain.
- b. Understand the contribution of gynecologic, urologic, gastrointestinal, musculoskeletal, neurologic, and vascular systems and the pathophysiology of each.

**2. Evaluation: (MK, PC)****a. History**

- i. Elicit a comprehensive medical history, including a directed history regarding the acute pain symptoms.

- ii. Assess for pertinent co-morbidities, such as diabetes and age, and understand how they can impact the acute pain presentation.

**b. Physical exam**

- i. Perform a focused physical examination, including abdominal and pelvic exams.

**c. Diagnostic tests**

- i. Order appropriate laboratory tests and imaging, such as cervical cultures, pregnancy test and pelvic ultrasound.

**d. Differential diagnosis**

- i. Form a differential diagnosis such as ovarian torsion, ectopic pregnancy, nephrolithiasis, appendicitis based on history, exam, and diagnostic testing.

**3. Management: (MK, PC, PBLI, ICS, SBP)**

- a. Determine the acuity of the patient's condition and triage as appropriate.
- b. Counsel patients regarding acuity of presentation, need for immediate versus delayed intervention, and the risks, benefits, and alternatives of non-surgical and surgical management options.
- c. If surgical intervention is required, counsel patient regarding route, organ preservation, and possible need for consultation of other services.
- d. Demonstrate appropriate medical management of acute pain, and pain refractory to initial management.

**4. Other considerations (MK, PC, PBLI, ICS, SBP)**

- a. Consider the impact on fertility and offer fertility preservation with conservative medical or surgical therapies when appropriate such as methotrexate versus unilateral salpingectomy for ectopic pregnancy, and ovarian cystectomy for ovarian torsion.
- b. Consider consultation with other specialists when appropriate, such as General Surgery.

**8. CHRONIC PELVIC PAIN**

**1. Physiology/Pathophysiology: (MK)**

- a. Define the diagnostic criteria of chronic pelvic pain, and how its physiology differs from acute pain.
- b. Understand the contribution of gynecologic, urologic, gastrointestinal, musculoskeletal, neurologic, and vascular systems to chronic pelvic pain and the pathophysiology of each.
- c. Define the diagnostic criteria and common etiologies of dyspareunia and chronic vulvar pain.
- d. Describe the biopsychosocial model of chronic pain, including the role of the central nervous system, and its implications for the management of women with chronic pelvic pain.

**2. Evaluation: (MK, PC)**

**a. History:**

- i. Elicit a comprehensive medical history, including menstrual, sexual, social and mental health history.
- ii. Identify comorbid conditions that can alter or affect the presentation and management of chronic pain.

**b. Physical exam:**

- i. Perform a focused physical examination, including localization of the pelvic pain, evaluation of possible neurologic, visceral, dermatologic, and musculoskeletal components.

- c. **Diagnostic tests:**
    - i. Order appropriate laboratory tests and imaging based patient's history and physical exam, such as genitourinary cultures, ultrasound, MRI and mental health screening tests.
  - d. **Differential diagnosis:**
    - i. Form a differential diagnosis that includes gynecologic, urologic, musculoskeletal, gastrointestinal, vascular, and neurologic disorders.
    - ii. Recognize the potential for co-existence of multiple pain disorders, mood disorders, and sleep disorders.
- 3. Management: (MK, PC, PBLI, ICS, SBP)**
- a. **Non-surgical:**
    - i. Educate patients regarding the biopsychosocial model of pain, including the role of the central nervous system in the initiation and maintenance of pain, particularly when usual organ-specific therapies have not been successful.
    - ii. Counsel patients regarding medical therapies for organ specific causes of chronic pelvic pain, such as hormone suppression for endometriosis and physical therapy for musculoskeletal pain.
    - iii. Counsel patients regarding the utility and risks of long-term narcotic use.
    - iv. Counsel patients regarding the impact of co-morbid mood and sleep disorders and refer to other providers as needed.
  - b. **Procedural:**
    - i. Describe interventional treatments for chronic pelvic pain, such as injections, laparoscopy, presacral neurectomy, adhesiolysis, and hysterectomy, including the efficacy, risks, benefits, and cost-effectiveness of each.
    - ii. Understand the role of bilateral salpingo-oophorectomy at the time of hysterectomy performed for chronic pelvic pain and long-term impact on health
- 4. Other considerations: (MK, PC, PBLI, ICS, SBP, P)**
- a. Consider consultation with other specialists when appropriate, such as physical therapy, psychiatry, pain medicine, urology and gastroenterology.
  - b. In patients who have failed treatment, identify possible reasons why a chosen treatment may not have been successful, identify potential misdiagnosis, and counsel patients about alternative options.
  - c. Consider the impact of fertility preservation and conservative surgeries (e.g. ovarian cystectomy versus oophorectomy) on short and long-term treatment success and future fertility.
  - d. Demonstrate sensitivity to the suffering and distress of patients who experience chronic pain and disability, including its impact on family and care givers.

## **9. CONGENITAL ANOMALIES OF THE UROGENITAL TRACT**

### **1. Physiology/Pathophysiology: (MK)**

- a. Demonstrate an understanding of the embryologic origins of the pelvic viscera.
- b. Describe the pathogenesis and physical findings characteristic of abnormalities of Mullerian development, such as hymenal abnormalities, vaginal agenesis, vaginal or uterine septums, and other uterine anomalies.
- c. Describe the pathogenesis of disorders of sexual differentiation.

### **2. Evaluation: (MK, PC)**

- a. **History:**
    - i. Elicit a comprehensive medical and menstrual history, including pain symptoms, related bowel or bladder dysfunction, and sexual history.
  - b. **Physical exam:**
    - i. Perform a focused, age-appropriate physical exam, including secondary sex characteristics, abdominal exam, and a limited genital exam. Consider rectal exam, where appropriate.
  - c. **Diagnostic tests:**
    - i. Order appropriate laboratory tests and imaging, such as endocrinologic assays, karyotype, and ultrasound or MRI.
  - d. **Differential diagnosis:**
    - i. Form a differential diagnosis based on history, exam, and diagnostic testing.
- 3. Management: (MK, PC, PBLI, ICS, SBP)**
- a. **Non-surgical:**
    - i. Discuss non-surgical treatments, such as dilator therapy and hormonal supplementation, and counsel patients and families regarding the risks, benefits and alternatives.
  - b. **Procedural:**
    - i. Understand the role of exam under anesthesia, vaginoscopy, and other surgical options for correction of mullerian anomalies, such as excision of rudimentary uterine horn, and metroplasty.
- 4. Other considerations: (MK, PC, PBLI, ICS, SBP)**
- a. Understand long term implications on fertility and counsel patients/families accordingly.
  - b. Consider consultation with other specialists when appropriate, such as social services and psychology/psychiatry.

**10. RISK REDUCING SURGERIES:** Women at risk for epithelial ovarian, fallopian tube and/or uterine cancer

- 1. Physiology/Pathophysiology: (MK)**
  - a. Describe the impact of familial cancer syndromes such as BRCA-1, BRCA-2, and Lynch Syndrome on lifetime risk of gynecologic cancer.
- 2. Evaluation: (MK, PC)**
  - a. **History:**
    - i. Elicit a comprehensive medical and family history.
  - b. **Physical exam:**
    - i. Perform a focused physical exam, including evaluation for adnexal mass.
  - c. **Diagnostic tests:**
    - i. Order appropriate laboratory tests and imaging, such as genetic testing and serum markers, ultrasound, CT scan, and/or MRI.
    - ii. Perform endometrial sampling in appropriate patients, such as those with Lynch Syndrome.
- 3. Management: (MK, PC, PBLI, ICS, SBP)**
  - a. **Non-surgical:**
    - i. Describe medical treatment options and/or surveillance in women with familial cancer syndromes and counsel patients accordingly.

**b. Procedural:**

- i. Explain the indications for, timing of, and expected risk reducing impact of procedures such as hysterectomy, oophorectomy, salpingectomy.
  1. Counsel patients regarding the outcomes of above including the impact on hormonal and reproductive function.
  2. Counsel patients regarding the risks and benefits of prophylactic salpingectomy performed at the time of other surgeries, or as a method of tubal sterilization.
- ii. Describe technique employed for risk reducing bilateral salpingo-oophorectomy and the role of additional evaluation such as serial sectioning of surgical specimens.

**4. Other considerations (MK, PC, PBLI, ICS, SBP)**

- a. Counsel patients on the need for long-term surveillance for peritoneal cancer and other potential malignancies.
- b. Review fertility-sparing options such as hormonal suppression.
- c. Consider consultation with other specialists when appropriate, such as Genetics and Gynecologic Oncology.

**11. SURGERY IN SPECIAL POPULATIONS****A. Patient Population: Morbidly Obese****1. Physiology/Pathophysiology: (MK)**

- a. Understand the physiologic changes associated with obesity and the correlation between obesity and gynecologic conditions, including menstrual dysfunction, endometrial hyperplasia and cancer, incontinence, and pelvic organ prolapse.

**2. Evaluation (MK, PC)****a. History:**

- i. Elicit a comprehensive medical and menstrual history, including co-morbidities such as obstructive sleep apnea and diabetes.

**b. Physical exam:**

- i. Perform a focused physical exam, including assessment of respiratory and cardiac function.

**c. Diagnostic tests:**

- i. Order appropriate laboratory tests and imaging, such as glucose testing and EKG.

**3. Management (MK, PC, PBLI, ICS, SBP)****a. Peri-operative planning**

- i. Review the increased risks of surgery related to obesity and role of preoperative optimization of weight and medical comorbidities.
- ii. Identify options to improve patient outcomes based on these co-morbidities.
- iii. Consider consultation with other specialists when appropriate, such as Anesthesia and Bariatric Surgery.
- iv. Identify the impact of the obesity on equipment needed during the surgery, peri-operative adjuvants such as DVT prophylaxis, and surgical techniques, approach, and visualization.

**B. Patient Population: Pregnant patients****1. Physiology/pathophysiology: (MK)**

- a. Understand the physiologic changes associated with pregnancy and the effects of surgery, such as laparoscopy and trendelenburg, on the mother and fetus.

**2. Evaluation (MK, PC)****a. History:**

- i. Elicit a comprehensive medical and pregnancy history.

**b. Physical exam:**

- i. Perform a focused physical exam, including assessment fundal height.

**c. Diagnostic tests:**

- i. Order appropriate laboratory tests and imaging, with fetal consideration.

**3. Management (MK, PC, PBLI, ICS, SBP)****a. Peri-operative planning**

- i. Review the risks of surgery related to pregnancy with regards to trimester and possibility of deferring surgery.
- ii. Identify areas that can be optimized to improve both patient and pregnancy outcome.
- iii. Consider consultation with other specialists when appropriate, such as Anesthesia and Maternal Fetal Medicine.
- iv. Identify the impact of the pregnancy on equipment needed during the surgery, peri-operative adjuvants such as DVT prophylaxis, surgical techniques, surgical approach, placement of trocars for laparoscopy, visualization, and fetal monitoring.

**C. Patient Population: Adolescents****1. Physiology/pathophysiology: (MK)**

- a. Understand the reproductive physiology of adolescents.

**2. Evaluation (MK, PC)****a. History:**

- i. Elicit a comprehensive medical and menstrual history, including pubertal development.
- ii. Identify patient guardian.

**b. Physical exam:**

- i. Perform a focused physical exam based on pubertal status and age.

**c. Diagnostic tests:**

- i. Order the appropriate laboratory tests and imaging, keeping age and pubertal status in mind.

**3. Management (MK, PC, PBLI, ICS, SBP)****a. Peri-operative planning****i. Counseling**

- 1. Involve guardian when indicated.
- 2. Review urgency of procedure and possibility of deferring (expectantly managing) until a later date.

- ii. Consider consultation with other specialists when appropriate, such as Pediatrics and Social Services.

- iii. Identify the impact of the pubertal status and age on equipment needed during the surgery, and surgical techniques, approach, and visualization.

#### **D. Patient Population: Geriatric patients**

##### **1. Physiology/pathophysiology: (MK)**

- a. Understand the physiologic changes associated with advanced age and multiple systemic co-morbidities.

##### **2. Evaluation (MK, PC)**

###### **a. History:**

- i. Elicit a comprehensive medical history related to advanced age and identify co-morbidities such as osteoporosis or joint limitations.
- ii. Identify living will and/or health care proxy as indicated.

###### **b. Physical exam:**

- i. Perform a focused physical exam, including assessment of functional status.

###### **c. Diagnostic tests:**

- i. Order the appropriate laboratory tests and imaging, while considering presence of co-morbidities (e.g. renal status and CT contrast).

##### **3. Management (MK, PC, PBLI, ICS, SBP)**

###### **a. Peri-operative planning**

###### **i. Counseling**

1. Involve guardian or durable power of attorney when indicated.
2. Balance risk of surgical intervention vs outcome of delayed/no treatment.

###### **ii. Identify options to improve patient outcomes based on co-morbidities.**

###### **iii. Consider consultation with other specialists when appropriate, such as Anesthesia and Geriatrics.**

###### **iv. Identify the impact of the patient's advanced age on equipment needed during the surgery, peri operative adjuvants such as DVT prophylaxis, and surgical techniques, approach and visualization, and mental status assessment.**

#### **12. PELVIC FLOOR DISORDERS**

##### **1. Physiology/Pathophysiology: (MK)**

- a. Describe the normal function, innervation, and anatomy of the urinary tract, gastrointestinal tract, and pelvic support system.
- b. Describe the anatomic functions which impact micturition and defecation

##### **2. Evaluation: (MK, PC)**

###### **a. History:**

- i. Elicit a comprehensive medical and reproductive history, including associated urinary, gastrointestinal, and musculoskeletal symptoms.

###### **b. Physical Exam:**

- i. Perform a focused pelvic examination, including assessment of uterovaginal support, pelvic floor, neurologic status, urethral hypermobility, presence of fistulas, and anal sphincter disruptions.

###### **c. Diagnostic tests:**

- i. Order appropriate laboratory tests and imaging, including urodynamic testing and defecography.
  - d. **Differential diagnosis:**
    - i. Form a differential diagnosis based on history, exam, and diagnostic testing
    - ii. Recognize that patients with pelvic floor disorders may have multiple etiologies for their symptoms.
- 3. **Management: (MK, PC, PBLI, ICS, SBP)**
  - a. **Non-surgical**
    - i. Discuss non-surgical treatments, such as medical therapies, physical therapy, and pessaries, and counsel regarding risks, benefits, alternatives.
  - b. **Procedural**
    - i. Discuss interventional treatments, such as sacrocolpopexy, uterosacral suspension, mid-urethral sling and the different surgical approaches for each [Section 26, Surgical Procedures for Treatment of Urinary & Fecal Incontinence, Pelvic Floor Prolapse].
    - ii. Review risks, benefits, and cost-effectiveness of procedural therapies.
- 4. **Other considerations: (MK, PC, PBLI, ICS, SBP)**
  - a. Identify factors that impact treatment options such as desire for fertility and comorbidities and review fertility-sparing options.
  - b. Consider consultation with other specialists when appropriate, such as Female Pelvic and Reconstructive Surgery and Colorectal Surgery.
  - c. In patients who have failed treatment, determine why a chosen treatment may not have been successful, identify potential misdiagnosis, and counsel patient about alternative options.

### 13. PERIOPERATIVE MANAGEMENT

- 1. **Physiology/Pathophysiology: (MK)**
  - a. Describe the impact of mode of anesthesia on patient physiology and surgical management.
  - b. Describe the impact of fluid absorption, pneumoperitoneum and Trendelenburg positioning on patient physiology [Section 17, Essentials of Laparoscopy].
- 2. **Preoperative management: (MK, PC, ICS, SBP)**
  - a. **History:**
    - i. Elicit a comprehensive medical history to identify gynecologic and non-gynecologic issues that may impact preoperative, intraoperative, and postoperative care.
  - b. **Physical exam:**
    - i. Perform a comprehensive physical exam aimed at identification and evaluation of findings that may impact preoperative, intraoperative, and postoperative care.
  - c. **Diagnostic tests:**
    - i. Order appropriate preoperative laboratory tests and imaging, such as CBC, EKG, HgA1C.
  - d. **Other preoperative management:**
    - i. Describe the indications, risks, and benefits of preoperative bowel preparation, antibiotic prophylaxis, and venous thromboembolism prophylaxis.

- ii. Describe patient positioning to allow surgeon access and to minimize patient neurologic, musculoskeletal, and pressure injury.
- iii. Describe the preoperative time-out (and its components), understand its importance, and perform time-out accordingly.

**3. Intraoperative management: (MK, PC, PBLI, SBP)**

- a. Identify indication for initiation of and/or continuation of antibiotic prophylaxis.
- b. Discuss methods of minimize negative effects of fluid absorption, pneumoperitoneum and Trendelenburg position [Section 17, Essentials of Laparoscopy].
- c. Identify and manage intraoperative complications [Section 29, Intraoperative Identification and Management of Visceral Injuries and Bleeding].

**4. Postoperative management: (MK, PC, PBLI, ICS, SBP, P)**

- a. Describe and perform routine postoperative care, such as management of intravenous fluids, diet, and pain following surgery.
- b. Identify indication for initiation of and/or continuation of antibiotic prophylaxis postoperatively.
- c. Counsel patients regarding expected postoperative course.
- d. Identify and manage postoperative complications [Section 14, Diagnosis and Management of Surgical Complications Identified in the Postoperative Period].
- e. Critically evaluate complications for quality improvement.

**5. Other Considerations: (MK, PC, ICS, SBP)**

- a. Utilize a collaborative approach for management, including consultation with anesthesia and nursing staff.

**14. DIAGNOSIS AND MANAGEMENT OF SURGICAL COMPLICATIONS IDENTIFIED IN POSTOPERATIVE PERIOD**

**1. Pathology/pathophysiology: (MK)**

- a. Understand the normal healing process and expected timeline for recovery after surgery.
- b. Understand how patient co-morbidities and intraoperative factors impact risk for postoperative complications.

**2. Evaluation: (MK, PC)**

- a. **History**
  - i. Perform a timely, comprehensive history to be able to detect risk and presence of postoperative complications.
- b. **Physical exam**
  - i. Perform focused exam based on patient history, symptoms, timing, and surgery performed.
- c. **Diagnostic tests**
  - i. Order appropriate laboratory tests and imaging to identify postoperative complications.
- d. **Differential diagnosis:**
  - i. Form a differential diagnosis based on history, exam, and diagnostic testing.

**3. Management (MK, PC, PBLI, ICS, SBP)**

- a. **Identify postoperative complications including:**
  - i. Wound complications, such as surgical site infections, hernia and vaginal cuff dehiscence.

- ii. Genitourinary complications, such as ureteral and bladder injury, urinary retention, urinary tract infection.
  - iii. Gastrointestinal complications, such as small bowel obstruction, enterotomy, ileus.
  - iv. Cardiovascular complications, including venous thromboembolism, myocardial infarction.
  - v. Neurologic complications, such as neuropathy.
  - b. **Non-surgical:**
    - i. Discuss non-surgical treatments and counsel patients regarding the risks, benefits and alternatives of medical therapies or surveillance.
  - c. **Procedural:**
    - i. Discuss interventional treatment, such as repeat surgery and interventional radiology procedures, including risks, benefits, and alternatives.
- 4. Other considerations (MK, PC, PBLI, ICS, SBP, P)**
- a. Conduct counseling regarding complications, including accountability, causal events, and current actions to correct, and long-term implications.
  - b. Understand the role of effective communication to reporting bodies, such as institutional risk management and the Food and Drug Administration.
  - c. Consider consultation with other services when appropriate, such as Interventional Radiology and Nursing Staff.

## **15. PRINCIPLES OF ENERGY SOURCES (MK, PC, PBLI, SBP)**

1. Utilize correct terminology for energy used in surgery.
2. Understand the principles of radiofrequency electrical energy use in surgery.
3. Explain the differences between monopolar, bipolar, ultrasonic, and laser instruments.
4. Describe factors that determine the tissue effects of each form of energy.
5. Describe technological advances in energy sources used in minimally invasive surgery.
6. Cite risks to patients associated with energy sources, including thermal injury and fire risk, and their prevention.
7. Apply these principles to safely use different energy sources in open, vaginal, laparoscopic, robotic, and hysteroscopic surgery.
8. Consider the cost-effectiveness of various energy sources and apply this to their appropriate utilization.

## **16. HYSTEROSCOPY**

1. **Preoperative evaluation: (MK, PC)**
  - a. Obtain a history, physical exam, and indicated laboratory and imaging studies to evaluate patients' gynecologic signs and symptoms that may necessitate hysteroscopy as part of the evaluation or treatment of the underlying condition
  - b. See [Section 3, Abnormal Uterine Bleeding]
2. **Patient selection, surgical indications, contraindications, alternatives: (MK, PC, ICS)**
  - a. Counsel patients on the risks, benefits and alternatives of this procedure
  - b. Determine who is appropriate for in office procedure vs. operating room
3. **Essentials of surgical technique: (MK, PC)**
  - a. Understand techniques to facilitate cervical dilation (e.g. misoprostol, pitressin, laminaria)

- b. Understand timing of procedure relative to menstrual cycle and/or pre-operative adjuvants (e.g. hormonal therapy, GnRH agonist therapy)
  - c. Understand the procedure for and be able to perform hysteroscopic procedures such as sterilization, removal of retained products of conception or foreign bodies, lysis of synechiae, metroplasty, polypectomy and myomectomy
  - d. Understand the indications and procedure for hysteroscopic tubal cannulation
- 4. Other intraoperative considerations: (MK)**
- a. Understand the following elements
    - i. Role and utilization of intraoperative ultrasound guidance.
    - ii. Fluid management systems and distention media including the choice of media and importance of pressure settings and impact on visualization, fluid loss.
    - iii. Biophysics of intrauterine energy-based instrumentation.
    - iv. The function and use of the hysteroscope and resectoscope, including different angle lenses and choice of outer diameter size, electrodes and instrumentation used for tissue resection, ablation, and morcellation.
- 5. Postoperative care unique to this procedure: (MK, PC)**
- a. Determine role and timing of serum electrolyte testing.
  - b. Describe the role of intra-uterine balloons, barriers, antibiotics and/or hormonal therapy prior to and after hysteroscopy to facilitate improved patient outcome.
- 6. Potential complications unique or highly linked to this procedure (prevention, identification, management): (MK, PC)**
- a. Demonstrate knowledge and skill to prevent, recognize and manage problems and complications including uterine access and perforation, hemorrhage, issues related to adjuvant medications or distention media, gas embolism, and intrauterine synechiae.
- 7. Other considerations: (MK, PC, PBLI, ICS, SBP, P)**
- a. Office based procedures
    - i. Describe which procedures are appropriate for the office setting.
    - ii. Recognize the co-morbidities and traits of patients that are contraindications to office surgery (e.g. cardiac conditions, stenotic cervix, anxiety).
    - iii. Understand the limitations of office based procedures, including equipment, anesthesia, personnel.
  - b. Consider cost-effectiveness of various hysteroscopic methods.
  - c. Communicate to the patient when a complication does occur and demonstrate accountability.
  - d. Critically evaluate outcomes and complications for quality improvement.

## 17. ESSENTIALS OF LAPAROSCOPY

### 1. Preoperative evaluation: (MK, PC)

- a. Obtain a history, physical exam, and indicated laboratory and imaging studies to evaluate patients' gynecologic signs and symptoms that may necessitate laparoscopy as part of the evaluation or treatment of the underlying condition.

### 2. Patient selection, surgical indications, contraindications, alternatives: (MK, PC, ICS)

- a. Identify absolute and relative contraindications to laparoscopy including patient factors such as acute angle glaucoma and increased intracranial pressure.
- b. Understand patient, environmental, and surgeon factors which allow for successful performance of a laparoscopic procedure.

- c. Describe physiologic changes which occur with laparoscopy related to increased intra-abdominal pressure, absorption of carbon dioxide, and trendelenburg positioning.
  - d. Understand the impact of medical conditions, including obesity and pregnancy, and previous surgeries on the performance of safe laparoscopy.
  - e. Anticipate when adhesive disease is likely to be encountered and be able to apply methods for avoiding organ injury.
  - f. Describe which clinical situations are best approached laparoscopically, compared to vaginally and via laparotomy.
  - g. Appropriately counsel patients about the risks, benefits, and alternatives to a laparoscopic surgical approach.
- 3. Essentials of surgical technique: (MK, PC, SBP)**
- a. Understand operating room organization.
  - b. Demonstrate appropriate patient positioning and preparation.
  - c. Understand and know how to perform safe abdominal access.
  - d. Describe and apply knowledge of abdominal and pelvic anatomy to choice of abdominal entry at various access sites including the umbilicus, left upper quadrant, sub-xiphoid, and other sites.
  - e. Access the abdomen through various methods including direct trocar insertion, Hasson technique, single-port access, and insufflation with a Veress needle.
  - f. Perform safe ancillary port placement with special consideration of site selection for specific pathologies like enlarged masses, gravid uteri.
  - g. Utilize various types of ports (including single port, hand-assist, ports for micro laparoscopy) appropriately.
  - h. Understand and be able to perform port site closure; know when and how to close fascia.
  - i. Apply techniques to minimize development of post-surgical adhesions and understand the appropriate use, indications, risks and benefits of various adhesion prevention strategies (e.g. instillates, barriers, gels, and sealants).
  - j. Understand and know how to optimize operative field and surgical visualization including how and when to use angled lenses.
- 4. Other intraoperative considerations: (MK, PC, PBLI)**
- a. Understand the impact of adhesive disease on fertility and apply methods to minimize post-surgical adhesion formation and reformation.
- 5. Postoperative care unique to this procedure: (MK, PC)**
- a. See [Section 13, Perioperative Management].
  - b. Understand, minimize, and address common postoperative complaints such as shoulder pain and incisional discomfort.
- 6. Potential complications unique or highly linked to this procedure (prevention, identification, management): (MK, PC)**
- a. See [Section 14, Diagnosis and management of surgical complications identified in the post operative period].
  - b. See [Section 29, Intraoperative Identification and Management of Visceral Injuries and Bleeding].
- 7. Other Considerations: (PC, PBLI, SBP)**
- a. Consider cost-effectiveness regarding utilization disposable versus reusable versus reuseable instrumentation.

## 18. ESSENTIALS OF ROBOTIC SURGERY

### 1. Preoperative evaluation: (MK, PC)

- a. See [Section 17, Essentials of Laparoscopic Surgery].

### 2. Patient selection, surgical indications, contraindications, alternatives: (MK, PC, ICS)

- a. Identify patients that are appropriate candidates for robotic surgery
  - i. See [Section 17, Essentials of Laparoscopic Surgery].
  - ii. See [Section 11, Surgery in Special Populations].
- b. Describe the benefits and limitations of a robotic platform.
- c. Counsel patients and families about the risks/benefits/alternatives of a robotic approach.

### 3. Essentials of surgical technique: (MK, PC, ICS)

- a. Identify surgical equipment and demonstrate ability to trouble shoot equipment issues
- b. Identify the most effective port placement for each patient.
- c. Perform docking (including center, side and parallel docking) and coordinate staff during docking.
- d. Define the role of adjuvant technology (e.g. Firefly technology).

### 4. Other intraoperative considerations (MK, ICS)

- a. Define and interpret visual haptics.
- b. Recognize equipment failure.
- c. Exhibit effective communication to the bed-side assist, anesthesia team, and operating room staff.

### 5. Postoperative care unique to this procedure: (MK, PC)

- a. See [Section 17, Essentials of Laparoscopic Surgery].

### 6. Potential complications unique or highly linked to this procedure (prevention, identification, management) (MK, PC, SBP, ICS, P)

- a. Coordinate the operating room staff in the setting of a mechanical breakdown of the robotic equipment.
- b. Recognize and manage the use of excessive pressure on various tissues.
- c. Identify erroneous activation of a control, errant movement of a robotic arm, positioning of a robotic arm and assess for potential inadvertent injury.
- d. Demonstrate accountability when robotic associated complications occur.

### 7. Other considerations: (MK, PC, PBLI, SBP, ICS)

- a. Describe the role of alternative technologies (e.g. AESOP, ViKY).
- b. Single site robotics
  - i. Identify patients that are appropriate candidates for single site robotic surgery.
  - ii. Demonstrate knowledge of surgical equipment, ability to trouble shoot equipment malfunction, limitations compared to traditional robotics and traditional single site surgery.
  - iii. Understand docking techniques and coordinating staff during docking.
  - iv. Understand suturing techniques specific to single site procedures.
- c. Consider cost-effectiveness of various surgical methods and the role of the robotics platform.
- d. Follow evolving evidence-based medicine regarding the utilization of the robotic platform and incorporate into practice patterns.

**19. ESSENTIALS OF VAGINAL SURGERY****1. Preoperative evaluation: (MK, PC)**

- a. Obtain a history, physical exam, and indicated laboratory and imaging studies to evaluate patients' gynecologic signs and symptoms that may necessitate vaginal surgery as part of the evaluation or treatment of the underlying condition.

**2. Patient selection, surgical indications, contraindications, alternatives: (MK, PC, PBLI, ICS)**

- a. Identify absolute and relative contraindications to vaginal surgery (e.g. history of pelvic irradiation or inability to place patient in dorsal lithotomy position).
- b. Understand patient, environmental, and surgeon factors which allow for successful performance of a vaginal surgery and decide which clinical situations are best approached vaginally, compared to other routes (e.g. laparoscopically or laparotomy).
- c. Identify when a combined approach may be indicated.
- d. Anticipate when adhesive disease is likely to be encountered and be able to apply methods for minimizing the risk of organ injury.
- e. Appropriately counsel patients about the risks, benefits, and alternatives to vaginal procedures.

**3. Essentials of surgical technique: (MK, PC)**

- a. Understand how to obtain access to the anterior and posterior cul-de-sacs, including how to avoid injury to the bowel and other abdominal contents.
- b. Understand how to access and remove the tubes and/or ovaries vaginally.
- c. Demonstrate knowledge of how and when to debulk a uterus vaginally using bivalving, coring and other morcellation techniques [Section 20, Tissue Retrieval and Extraction].
- d. Understand how to close the vaginal cuff and support the vaginal apex at the time of hysterectomy such as with uterosacral ligament suspension.
- e. Understand the risks and benefits laparoscopic assistance during a vaginal procedure.
- f. Understand how to perform cystoscopy when indicated.

**4. Other intraoperative considerations (including any special consideration for women who wish to preserve their fertility): N/A****5. Postoperative care unique to this procedure: (MK, PC, PBLI)**

- a. Understand the risks of urinary retention and describe the diagnostic and treatment algorithm for the management of urinary retention.

**6. Potential complications unique or highly linked to this procedure (prevention, identification, management) (highly linked: for example, ureteral injuries are not unique to any specific surgery, but are highly linked to hysterectomy or retroperitoneal dissection): (MK, PC, PBLI)**

- a. Minimize the risk of, identify and manage postoperative complications such as neurologic injuries from patient positioning, fallopian tube prolapse, and vaginal cuff evisceration.
- b. Identify the technical challenges to the vaginal approach such as limited exposure and visualization, achieving hemostasis, removal of the tubes and/or ovaries and describe techniques to overcome these challenges.
- c. Demonstrate how to palpate the ureters during vaginal procedure and prevent ureteral and bladder injuries.

**20. TISSUE RETRIEVAL AND EXTRACTION****1. Preoperative evaluation: (MK, PC)**

- a. Obtain a history, physical exam, and indicated laboratory and imaging studies to evaluate patients' underlying gynecologic problem that may indicate a need for tissue extraction and retrieval as part of another surgical intervention.
  - b. Recognize potential limitations of tissue extraction techniques in relation to the patient's body habitus, anatomy, and co-morbidities.
  - c. Perform appropriate preoperative assessment on patients in whom in situ tissue fragmentation may occur.
  - d. See [Section 3, Abnormal Uterine Bleeding], [Section 4, Uterine Fibroids], [Section 26, Surgical Procedures for Treatment of Urinary & Fecal Incontinence, Pelvic Floor Prolapse].
- 2. Patient selection, surgical indications, contraindications, alternatives: (MK, PC, ICS)**
- a. Counsel patients on all of the risks, benefits and alternatives of tissue extraction techniques.
    - i. Discuss the benefits and risks of open power morcellation, potential risk of spill and dissemination, and potential risk of upstaging an unrecognized malignancy.
    - ii. Be familiar with evidence-based rates of occult malignancy and risks of incomplete pathologic evaluation of morcellated specimens.
  - b. Determine which patients are appropriate for vaginal, laparoscopic, minilaparotomy, versus an open approach.
- 3. Essentials of surgical technique: (MK, PC)**
- a. Be familiar with commercially available power morcellators, specimen retrieval bags and their relative risks and benefits.
  - b. Understand and perform various specimen removal techniques such as posterior colpotomy, power morcellation, and scalpel morcellation of solid tissue masses –via abdominal and vaginal routes..
    - i. Discuss the role of self-retaining retractors.
  - c. Describe the benefits and risks of contained versus uncontained morcellation.
- 4. Other intraoperative considerations: (MK, PC, PBLI, ICS)**
- a. Understand management and disclosure of a torn specimen bag.
- 5. Postoperative care unique to this procedure: (MK, PC, PBLI, SBP, ICS)**
- a. In the setting of an occult malignancy with or without intraoperative spillage, recognize appropriate management strategies including referral to gynecologic oncology.
- 6. Potential complications unique or highly linked to this procedure (prevention, identification, management): (MK, PC)**
- a. Demonstrate knowledge and skill to prevent, recognize and manage complications, such as port site hernia, nerve entrapment, impaired wound healing and infection, retained tissues and disseminated disease.
- 7. Other considerations: (MK, PC, PBLI)**
- a. Follow and incorporate evolving evidence based medicine into practice patterns.

## 21. ADNEXAL SURGERY

### 1. Preoperative evaluation (MK, PC)

- a. See [Section 6, Adnexal Pathology].
- b. Obtain a history, physical exam, and indicated laboratory and imaging studies to evaluate patients' underlying gynecologic problem that may indicate a need for adnexal surgery.

2. **Patient selection (MK, PC, PBLI, ICS)**
  - a. Identify indications and appropriate candidates for adnexal surgery.
  - b. Offer appropriate alternatives to adnexectomy, including but not limited to expectant management, medical management, ovarian cystectomy, and partial adnexectomy.
3. **Essentials of surgical technique (MK, PC, SBP)**
  - a. Plan incision and route to optimize access to adnexa(e) while balancing patient safety and long-term outcome.
  - b. Understand pelvic anatomy and retroperitoneal anatomy [Section 25, Retroperitoneal Dissection].
  - c. Dissect and ligate adnexal vasculature (if needed), including infundibulo-pelvic ligament with visualization of ipsilateral ureter.
  - d. Identify planes of normal and abnormal tissue within adnexal anatomy to optimize complete and safe removal of pathology while avoiding damage and/or removal of normal tissue.
  - e. Understand available equipment to successfully remove adnexal specimen from abdomen.
  - f. Maintain hemostasis of excision site.
4. **Other intra-operative considerations (MK, PC, PBLI)**
  - a. Limit peritoneal spill of abnormal adnexal cyst contents.
  - b. Limit impact on future fertility in patients who have not completed child-bearing.
5. **Post-operative care unique to this procedure (MK, PC, PLBI, SBP, ICS)**
  - a. Offer hormone replacement as indicated and discuss risks, benefits, and alternatives
  - b. Review pathology and discuss implications with patient.
  - c. Refer to appropriate specialties in timely manner if needed, such as Gynecologic Oncology.
6. **Other considerations (MK, PC, PBLI, ICS)**
  - a. Understand potential impact on fertility.
  - b. Understand potential impact on menopause status.
  - c. Understand potential for unanticipated malignancy and necessary follow up.
  - d. Understand risk of ureteral injury.
  - e. Understand risk of ovarian remnant and subsequent treatment options.
  - f. Understand options for relocating/fixing gonadal structures to prevent damage from radiation field or recurrent torsion.

## 22. SURGICAL TREATMENT OF CONGENITAL ANOMALIES OF THE REPRODUCTIVE TRACT

1. **Preoperative evaluation: (MK, PC)**
  - a. Obtain a history, physical exam, and indicated laboratory and imaging studies to evaluate patients' underlying gynecologic problem that may indicate a need for surgical treatment of a congenital anomaly.
  - b. See [Section 9, Congenital Anomalies of the Urogenital Tract].
2. **Patient selection, surgical indications, contraindications, alternatives: (MK, PC, ICS)**
  - a. Cite indications for surgical management of congenital anomalies of the reproductive tract including, but not limited to:
    - i. Imperforate hymen
    - ii. Vaginal agenesis
    - iii. Vaginal septum

- iv. Uterine septum
- v. Fallopian tubes and/or non-communicating rudimentary uterine horns
- b. Explain and counsel patients regarding alternatives to surgical management when appropriate, including hormonal suppression and vaginal dilation.
- 3. Essentials of surgical technique: (MK, PC)**
  - a. Describe and perform surgical management of imperforate hymen.
  - b. Describe surgical management of neovagina creation, including vaginal and laparoscopic approaches.
  - c. Describe and perform surgical management of longitudinal and transverse vaginal septum.
  - d. Describe and perform surgical management of uterine septum.
  - e. Describe and perform resection of fallopian tubes and rudimentary uterine horns when appropriate.
- 4. Postoperative care unique to this procedure: (MK, PC)**
  - a. Describe postoperative management of neovagina, including maintenance therapy to prevent recurrent vaginal stricture.
  - b. Describe postoperative management of vaginal and uterine septum resection.
- 5. Potential complications unique or highly linked to this procedure (prevention, identification, management): (MK, PC)**
  - a. Recognize potential for aberrant urinary tract anatomy and increased risk of injury.
  - b. Understand increased risk of fistula formation or trapped fluid collection.
- 6. Other considerations: (MK, PC, PBLI, SBP, ICS)**
  - a. Counsel patients on the impact of congenital anomalies of the urogenital tract on fertility.
  - b. Counsel patients on impact of pregnancy and delivery, should pregnancy occur.
  - c. Utilize a collaborative approach for management, such as consultation with adult and pediatric medical and surgical subspecialties when appropriate.

## **23. HYSTERECTOMY AND TRACHELECTOMY**

- 1. Preoperative evaluation: (MK, PC)**
  - a. Obtain a history, physical exam, and indicated laboratory and imaging studies to evaluate patients' signs and symptoms that indicate hysterectomy/trachelectomy is an appropriate treatment option.
- 2. Patient selection, surgical indications, contraindications, alternatives: (MK, PC, PBLI, ICS)**
  - a. Cite indications for hysterectomy and trachelectomy, and counsel patients regarding the risks and benefits of these options, and non-surgical alternatives.
  - b. Describe the selection of and outcomes associated with the surgical approach.
- 3. Essentials of surgical technique as indicated: (MK, PC)**
  - a. Perform safe entry for each route.
  - b. Secure vascular supply, ensure safety of adjacent organs, and create colpotomy or transect cervix.
  - c. Perform vaginal cuff closure.
  - d. Understand the role of cystoscopy and perform when indicated.
  - e. See associated topics: [Section 17, Essentials of Laparoscopy], [Section 18, Essentials of Robotic Surgery], [Section 19, Essentials of Vaginal Surgery].
- 4. Other intraoperative considerations: (MK, PC, PBLI, ICS)**

- a. See [Section 20, Tissue Retrieval and Extraction].
  - b. Discuss the risks and benefits of ovarian retention, unilateral or bilateral oophorectomy, and/or salpingectomy.
- 5. Postoperative care unique to this procedure: (MK, PC)**
- a. Understand the role of pelvic rest in the postoperative period.
- 6. Potential complications unique or highly linked to this procedure (prevention, identification, management, and role of surgical approach): (MK, PC, PBLI, SBP)**
- a. Describe the incidence of vaginal cuff dehiscence and methods of reducing the risk of dehiscence.
  - b. Describe and perform evaluation, management, and repair of vaginal cuff dehiscence and associated bowel or bladder concerns.
  - c. Describe the incidence of urinary tract injury, methods of injury prevention.
  - d. Recognize and manage urinary tract injury, identified intraoperatively or postoperatively.
- 7. Other considerations: (MK, PC, SBP)**
- a. Describe the role of a gestational carrier for patients desiring fertility following a hysterectomy.
  - b. Critically evaluate outcomes and complications for quality improvement.

## 24. MYOMECTOMY

- 1. Preoperative evaluation: (MK, PC)**
- a. Obtain a history, physical exam, and indicated laboratory and imaging studies to evaluate patients' signs and symptoms that indicate a myomectomy is a treatment option.
  - b. See [Section 4, Uterine Fibroids].
- 2. Patient selection, surgical indications, contraindications, alternatives: (MK, PC, PBLI, ICS)**
- a. Determine which patients are appropriate for hysteroscopic, laparoscopic, robotic versus open approach and counsel patients on all of the risks, benefits and alternatives of each procedure performed.
  - b. Counsel patients regarding methods of tissue extraction [Section 20, Tissue Retrieval and Extraction].
  - c. Identify patients with risk factors for malignancy and counsel patients regarding the risk of malignancy.
- 3. Essentials of surgical technique: (MK, PC, PBLI)**
- a. Hysteroscopic approach: Understand the maneuvers to maximize complete resection [Section 16, Hysteroscopy].
  - b. Laparoscopic, robotic, open approach [Section 17, Essentials of Laparoscopy], [Section 18, Essentials of Robotic Surgery]
    - i. Understand how to create hysterotomy – size, location, direction of incision(s) to minimize bleeding, adhesion formation, and uterine hematoma or dehiscence.
    - ii. Understand how to perform a multi-layer closure including suturing and knot tying regardless of surgical route and describe options for suture – monofilament, braided, versus barbed suture.

- iii. Recognize entry in the endometrial cavity including techniques to identify entry (e.g. dye, sterile milk) and understand how to perform closure technique if the cavity is entered
- iv. Understand the utility of and perform temporary or permanent uterine artery occlusion when appropriate.

**4. Other intraoperative considerations (MK, PC)**

- a. Understand the role and utilization of intraoperative ultrasound guidance.
- b. Describe interventions to minimize intraoperative bleeding including medical (e.g. misoprostol, pitressin, hemostatic agents including thrombin, fibrin sealant) and mechanical (e.g. tourniquets, uterine artery occlusion, etc.) methods, and use of cell saver as appropriate.
- c. Discuss options for postoperative adhesion prevention (surgical technique, adjuvants and role of second look laparoscopy).

**5. Postoperative care unique to this procedure: (MK, PC)**

- a. Understand the prevention and management of hemorrhage.
- b. Describe the role of methods to control postoperative bleeding or prevention of intrauterine adhesions, such as the use of intrauterine catheters or postoperative estrogen therapy.

**6. Potential complications unique or highly linked to this procedure (prevention, identification, management): (MK, PC, PBLI)**

- a. Demonstrate knowledge and skill to prevent, recognize and manage the following problems and complications including hemorrhage and potential need for hysterectomy, intrauterine and intraperitoneal pelvic adhesion formation and its repercussions.
- b. Discuss complications related to adjuvant medications (e.g. pitressin, misoprostol).

**7. Other considerations: (MK, PC, PBLI, ICS)**

- a. Counsel patients who desire future fertility, including timing of conception after surgery, the risk of uterine rupture during pregnancy, and the need for cesarean-section for delivery (when applicable).

**25. RETROPERITONEAL DISSECTION (RESECTION OF ENDOMETRIOSIS INCLUDING DEEPLY INFILTRATIVE, URETEROLYSIS, PRESACRAL NEURECTOMY)**

**1. Preoperative evaluation: (MK, PC)**

- a. Obtain a history, physical exam, and indicated laboratory and imaging studies to evaluate patients' signs and symptoms that indicate retroperitoneal dissection may be required during the surgical treatment.

**2. Patient selection: (MK, PC)**

- a. Identify indications and benefits of retroperitoneal dissection as an adjunct procedure with other planned surgery.
- b. Effectively utilize available pre-operative imaging to assist procedure planning.
- c. Identify any aberrant anatomy.

**3. Essentials of surgical technique: (MK, PC, SBP)**

- a. Understand anatomic relationships of the vascular, nerve, and musculoskeletal structures of the pelvis and how to access these retroperitoneal structures safely [Section 1, Abdominal and Pelvic Anatomy].

- b. Understand the surgical equipment, instruments and energy devices, and their indications and limitations in the retroperitoneal space.
  - c. Open retroperitoneal space in an avascular plane.
  - d. Continue dissection with the recognition of adjacent anatomic landmarks.
  - e. Avoid injury to vital retroperitoneal structures and maintain hemostasis.
- 4. Other intra-operative considerations: (MK, PC, SBP)**
- a. Utilize surgical assistants and tools to provide adequate retraction and exposure needed to facilitate dissection.
  - b. Describe available technologies to prevent hemorrhage or delayed postoperative bleeding.
- 5. Post-operative care unique to this procedure:**
- a. Describe the methods to monitor adequate renal function and identify signs of urinary tract injury.
- 6. Potential complications related to this procedure: (MK, PC)**
- a. Understand increased risk of vascular and urinary tract injury when performing retroperitoneal dissection.
  - b. Recognize and manage vascular and urinary tract injury, identified intraoperatively or postoperatively.
- 26. SURGICAL PROCEDURES FOR TREATMENT OF URINARY & FECAL INCONTINENCE, PELVIC FLOOR PROLAPSE**
- 1. Preoperative evaluation: (MK, PC)**
- a. Obtain a history, physical exam, and indicated laboratory and imaging studies to evaluate patients' signs and symptoms that indicate treatment of a pelvic floor disorder.
  - b. See [Section 12, Pelvic Floor Disorders]
- 2. Patient selection, surgical indications, contraindications, alternatives: (MK, PC, PBLI)**
- a. Discuss the indications, alternatives, risks, benefits, complications, success rates and levels of evidence for prolapse procedures such as those listed below
    - 1. Sacrocolpopexy (open, laparoscopic, robotic)
    - 2. Vaginal mesh procedures (absorbable, non-absorbable, biologics)
    - 3. Uterosacral suspension
    - 4. Sacrospinous ligament suspension
    - 5. McCall's culdoplasty
    - 6. Colpocleisis
    - 7. Anterior and posterior colporrhaphy
    - 8. Anterior vaginal repair with graft
    - 9. Posterior vaginal repair with graft
    - 10. Paravaginal repair
  - b. Discuss the indications, alternatives, risks, benefits, complications, success rates and levels of evidence for each of the following urinary continence procedures
    - 1. Periurethral bulk injections
    - 2. Retropubic urethropexy (Marshall-Marchetti-Krantz, Burch, and paravaginal defect repair)
    - 3. Sling procedures
    - 4. Kelly-Kennedy plication
  - c. Discuss the surgical and non-surgical options for treating fecal incontinence.

3. **Essentials of surgical technique: (MK, PC)**
  - a. Describe the anatomy of the retroperitoneal space, presacral space, paravesical and pararectal space.
  - b. Describe the anatomy of the bladder, bony landmarks of the pelvis, nerves of the pelvis, muscles of the pelvic floor, and ligaments of the pelvis.
4. **Other intraoperative considerations: (MK, PC)**
  - a. Discuss the increased risk of urinary tract injury and methods for intra-operative detection and management.
5. **Postoperative care unique to this procedure: (MK, PC)**
  - a. Understand the role and duration of pelvic rest after incontinence and prolapse procedures.
6. **Potential complications unique or highly linked to this procedure (prevention, identification, management): (MK, PC, PBLI, ICS)**
  - a. Identify and manage short and long-term postoperative complications including urinary retention, ureteral and bladder injury, fistula formation, chronic pain, dyspareunia and mesh exposure.
  - b. Discuss risk of surgery failure and symptom recurrence

## 27. URINARY TRACT SURGERY RELATED TO MIGS SURGEON

1. **Preoperative evaluation: (MK, PC)**
  - a. Describe the role of preoperative imaging and cystoscopy in evaluation of the urinary tract as it relates to a planned gynecologic procedure.
2. **Patient selection, surgical indications, contraindications, alternatives: (MK, PC, ICS, PBLI, SBP):**
  - a. Counsel patients regarding implications of extensive disease processes which may result in urologic surgery such as endometriosis or pelvic adhesive disease.
  - b. Identify indications and contraindications for surgical management including, but not limited to endometriosis, pelvic adhesive disease, and non-primary procedures (e.g.: cystoscopy after hysterectomy).
  - c. Describe the indications for referral of a patient to a specialist in urology.
3. **Essentials of surgical technique: (MK, PC, SBP)**
  - a. Understand pelvic anatomy, including anatomy of the retroperitoneal space
  - b. Perform ureterolysis and dissection as appropriate.
  - c. Describe methods to delineate the bladder, especially in presence of adhesive disease
  - d. Perform a diagnostic cystoscopy.
  - e. Describe the indications, risks and procedure for placement of a ureteral stent.
  - f. Recognize when to request an intraoperative or post-operative consult for a specialist in urology.
4. **Other intraoperative considerations (including any special consideration for women who wish to preserve their fertility): n/a**
5. **Postoperative care unique to this procedure: (MK, PC)**
  - a. Understand the management of a cystotomy repair, ureteral reimplantation, ureteral reanastomosis.
6. **Potential complications unique or highly linked to this procedure (prevention, identification, management): (MK, PC, PBLI, SBP, ICS, P)**
  - a. Recognize and appropriately manage transection of the ureter, identified intraoperatively and postoperatively.

- a. Recognize and appropriately manage a thermal injury to the bladder or ureter, identified intraoperatively and postoperatively.
- b. Recognize and appropriately manage bladder cystotomy, identified intraoperatively and postoperatively.
- b. Recognize and appropriately manage a fistula postoperatively.
- c. Recognize and appropriately manage urinary retention postoperatively.
- d. Recognize and appropriately manage hematuria postoperatively.
- e. Communicate to the patient when a complication does occur and demonstrate accountability.

## 28. GASTROINTESTINAL SURGERY RELATED TO MIGS SURGEON

### 1. Preoperative evaluation (MK, PC):

- a. Describe the role of preoperative imaging (e.g. barium studies) and procedures (e.g. colonoscopy or sigmoidoscopy) in evaluation of the GI tract as it relates to a planned gynecologic procedure.

### 2. Patient selection, surgical indications, contraindications, alternatives (MK, PC, PBLI, SBP, ICS):

- a. Counsel patients regarding implications of extensive disease processes which may result in gastrointestinal surgery such as endometriosis or pelvic adhesive disease.
- b. Identify indications and contraindications for surgical management including, but not limited to endometriosis, mucinous cystadenoma, appendicitis.
- c. Describe the indications for referral of a patient to a specialist in general surgery or colorectal surgery.

### 3. Essentials of surgical technique: (MK, PC, SBP)

- a. Appendix
  - i. Describe the anatomy and blood supply to the appendix.
  - ii. Isolate and secure the blood supply to the appendix.
  - iii. Ligate and transect the appendix, avoiding spill.
- b. Large and small intestines
  - i. Describe anatomy and blood supply to the small and large intestines.
  - ii. Discuss when an intestinal incision (e.g. coin resection or a bowel resection) is indicated, and the indication for the type of incision.
  - iii. Describe the identification and appropriate closure of an enterotomy.
  - iv. Understand and perform a bowel integrity test.
  - v. Demonstrate how to run the bowel and identify a bowel injury.
  - vi. Recognize when to consult for general surgery, colorectal surgery, gynecologic oncology.

### 4. Other intraoperative considerations (including any special consideration for women who wish to preserve their fertility): n/a

### 5. Postoperative care unique to this procedure: (PC)

- a. Discuss the appropriate postoperative management of a patient who underwent an appendectomy, bowel repair or bowel resection.

### 6. Potential complications unique or highly linked to this procedure (prevention, identification, management): (MK, PC, PBLI, SBP, ICS)

- a. Recognize and appropriately manage an enterotomy, identified intraoperatively and postoperatively

- b. Recognize and appropriately manage a thermal injury, identified intraoperatively and postoperatively
- c. Recognize and appropriately manage a bowel obstruction or ileus postoperatively
- d. Communicate to the patient when a complication does occur and demonstrate accountability

## **29. INTRAOPERATIVE IDENTIFICATION AND MANAGEMENT OF VISCERAL INJURIES AND BLEEDING**

### **1. Preoperative evaluation: (MK, PC, PBLI, SBP, ICS)**

- a. Identify patients at heightened risk of visceral injury and/or bleeding complications based on history, exam, and imaging.
- b. Counsel patients regarding these risks and methods of risk reduction.
- c. Discuss and counsel patients regarding alternatives to surgical management and alternative surgical procedures.

### **2. Essentials of surgical technique: (MK, PC, PBLI, SBP)**

- a. Explain intraoperative techniques employed to reduce risk of bowel, urinary tract, and vascular injury
  - i. Describe and perform various entry techniques [Section 17, Essentials of Laparoscopy], [Section 19, Essentials of Vaginal Surgery].
  - ii. Describe and safely perform lysis of adhesions and retroperitoneal dissection when indicated [Section 25, Retroperitoneal Dissection].
  - iii. Explain the role of intraoperative cystoscopy and perform this procedure as indicated.
  - iv. Explain the role of intraoperative rectal assessment and perform assessment of rectal integrity as indicated.
  - v. Cite medical therapies, surgical techniques, and resources available to minimize intraoperative blood loss and associated complications.
- b. Understand the management of intraoperative visceral injury and perform repair when appropriate, including:
  - i. Cystotomy
  - ii. Ureteral injury
  - iii. Bowel injury
  - iv. Describe initial response to vascular injury and immediate steps to prevent hemorrhage and maintain patient stability
  - v. Describe response to suspected gas embolism and immediate management of patient

### **3. Postoperative care unique to this procedure: (MK, PC)**

- a. Discuss postoperative management of urinary tract injury, bowel injury, and vascular injury

### **4. Other considerations: (PC, SBP, ICS)**

- a. Communicate to the patient when a complication does occur and demonstrate accountability.
- b. Utilize a collaborative approach for management, such as consultation with General Surgery, Vascular Surgery, and/or Urology as indicated.
- c. Consult risk management where appropriate and disclose injury to patient.

### 30. PROFESSIONALISM, ETHICS, ACCOUNTABILITY AND COMMUNICATION

**Learning Objective/Goal:** Demonstrate commitment to professional responsibilities and an adherence to ethical principles while practicing in a manner representative of the values of the FMIGS program.

**Objectives:**

1. Demonstrate respect for patient privacy and autonomy.
2. Demonstrate sensitivity for a diverse patient population.
3. Demonstrate appropriate responsiveness and respect for others while acting in the role of a consultant.
4. Maintain ethical relationships with pharmaceutical and medical device industry and report all relationships as dictated by current legal statutes.
5. Maintain appropriate relationships with ancillary staff, support staff, and trainees in order to not negatively affect training or patient care.
6. Provide and accept feedback in a positive manner, and adjust actions to reflect the response to that feedback.
7. Demonstrate self-awareness in areas of fatigue, stress, punctuality, dress, peer relationships, work hours, and timeliness for completion of duties.
8. Demonstrate an understanding of ethical principles and their application to patient care.
9. Demonstrate appropriate counseling when giving informed consent, and be inclusive of all risks, benefits, alternatives, and cost-effectiveness to proposed treatment plan.
10. Continue to follow and incorporate evolving evidence/treatment options into practice patterns.
11. Continue to critically evaluate outcomes and complications for quality improvement, both personally and institutionally.

### 31. RESEARCH DESIGN, ANALYSIS AND INTERPRETATION

1. Design a hypothesis driven analytical study, including: (MK, PBLI)
  - a. Define the problem
  - b. Develop hypothesis (null hypothesis) and specific aims
  - c. Define the operational terms (criteria)
  - d. Determine the sample size with appropriate statistical analysis
  - e. Know study limitations
  - f. Draw appropriate inferences
  - g. Make valid conclusions
2. Discuss different types of study bias (selection, information, confounding). (MK, PBLI)
  - a. Discuss different types of study design, strengths and limitations of each
  - b. Identify and apply appropriate measures of central tendency, types of distribution (normal vs. non-normal) and statistical analysis for each (parametric vs. nonparametric)
  - c. Describe difference between prevalence and incidence
  - d. Provide definitions for false positive, false negative, positive predictive value, sensitivity, and specificity
3. Define and interpret the meaning of Type I error (alpha error) and Type II error (beta error). (MK, PBLI)
4. Use appropriate statistical methods to determine if differences between study populations are significant. (MK, PBLI)
5. Define and describe the use of: (MK, PBLI)
  - a. Chi-square test of association

- b. Independent and paired student's t-test
  - c. Mann-Whitney U test
  - d. Wilcoxon sign rank test
  - e. Pearson and Spearman correlations
  - f. Analysis of variance (ANOVA)
  - g. Logistic and linear regression analysis
  - h. Odds ratio, risk ratio, hazards ratio
  - i. Survival analysis
6. Interpret confidence intervals. (MK)
7. Interpret research findings and discuss potential limitations. (MK)

### **32. SCIENTIFIC DISSEMINATION**

1. Write publishable scientific thesis, including:
  - a. Study aims
  - b. Study population and generalizability of findings
    - i. Inclusion and exclusion criteria
    - ii. Appropriate study design to answer specific aims
    - iii. Experimental, randomized, analytical, prospective/retrospective, observational
    - iv. Types of bias (selection, information, confounding)
    - v. Appropriateness of control group
    - vi. Statistical (study) power
    - vii. Outcome measures
2. Analysis of results is appropriate (statistical tests and interpretations).
3. Conclusions justified by findings and relevant to hypothesis.