Learning Objective

Upon completion, participants should be able to:
• Review uterine-sparing fibroid therapies
Background

- Uterine fibroids are benign smooth muscle tumors of the uterus
- Affects 70%-80% of all women by age 50
- Although rare (approximately 2 per 1,000 women), a small percentage of uterine fibroids are malignant (leiomyosarcoma)
- Symptoms include bleeding, pain, pressure, and infertility
- Significant effect on health and quality of life
- Leading indication for hysterectomy
- Demand for uterine-sparing treatments continues to grow

Uterine-Sparing Treatment Options

- Medical therapies
  - GnRH agonists
  - Levonorgestrel IUD*
  - Aromatase inhibitors*
  - OCPs, progesterone receptor modulators, tranexamic acid*
- UAE
- MRgFUS
- RFVTA
- Myomectomy
  - Hysteroscopic
  - Laparotomy
  - Laparoscopic/robotic-assisted

*Off-label use
Choosing Treatment Options

- Symptoms: bleeding vs bulk-related
- Location of fibroids
- Desire to preserve fertility

Medical Therapies

<table>
<thead>
<tr>
<th>Agent</th>
<th>Adverse Effects</th>
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<tbody>
<tr>
<td>GnRH agonists</td>
<td>Hot flashes, headaches, and osteoporosis</td>
</tr>
<tr>
<td>Levonorgestrel IUD*</td>
<td>Vulvovaginitis, abdominal/pelvic pain, acne/seborrhea, ovarian cysts, breast pain, and headache</td>
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<tr>
<td>Aromatase inhibitors*</td>
<td>Hot flashes, muscle pain, osteoporosis, vaginal dryness, and decreased libido</td>
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<tr>
<td>OCPs*</td>
<td>Intermenstrual spotting, nausea, breast tenderness, headache, weight gain, mood changes, and decreased libido</td>
</tr>
<tr>
<td>Progesterone receptor modulators*</td>
<td>Nausea, weakness, fever/chills, vomiting, headache, diarrhea, and dizziness</td>
</tr>
<tr>
<td>Tranexamic acid*</td>
<td>Headache; sinus/nasal symptoms; back, abdominal, musculoskeletal, and joint pain; muscle cramps; migraine; anemia; and fatigue</td>
</tr>
</tbody>
</table>

*Off-label use.
Use of Medical Therapies

- Short-term relief of fibroid symptoms
  - Particularly when bleeding is the dominant or only symptom
  - Suitable for perimenopausal women or patients ineligible for surgery
- Preoperative management to reduce fibroid size, control bleeding, and improve hemoglobin levels
- Long-term treatment is not recommended
  - Failure rates are high—60% undergo surgery after 2 years
  - Randomized clinical trial data demonstrating long-term effectiveness are lacking
  - Significant adverse effects


Surgical Therapies: Myomectomy

- Gold standard for patients desiring fertility
- > 70% of patients report improvement in menorrhagia and pelvic pain
- Complications
  - Fever, infection, blood transfusion, and adhesions
- Recurrence
  - 50% at 5 years
  - 11%-26% require additional surgery
- Patients may require Cesarean delivery for future pregnancies

Surgical Approaches

• Hysteroscopy
• Laparotomy
• Laparoscopy
• Robotic-assisted

Laparotomy vs Laparoscopy vs Robotic-Assisted

• Approach depends on myoma characteristics and surgeon experience
• All approaches are effective in treating menorrhagia and bulk-related symptoms
Recurrence Risk

- **Laparotomy:** 27%-59% at 5 years
- **Laparoscopy:** up to 85% at 8 years
- **Rossetti 2001:**
  - RCT; 81 women with infertility and ≤ 7 fibroids
  - **No significant difference between laparoscopic and abdominal myomectomy in recurrence of fibroids at 3.3 years**
  - 27% with laparoscopic vs 23% with laparotomy

Laparotomy vs Laparoscopy vs Robotic-Assisted

- **Laparotomy:**
  - **Benefits:** exposure, tactile sensation, uterine closure, shorter operative time
  - **Drawbacks:** longer recovery, more pain
- **Laparoscopy:**
  - **Benefits:** Less postoperative pain, shorter hospital stay, faster recovery
  - **Drawbacks:** limited to 1 or 2 fibroids ≤ 8 cm
- **Robotic-assisted:**
  - **Benefits:** offers minimally invasive treatment for large fibroids, multiple fibroids, and those in a difficult location
  - **Drawbacks:** long OR time, cost of procedure
In Between Therapies

UAE

- Occlusion of the uterine arteries via release of synthetic emboli → ischemic necrosis

### Candidate for UAE

- Heavy menstrual cycles or dysmenorrhea secondary to fibroids
- Premenopausal
- No desire for fertility

### Contraindications

- Asymptomatic fibroids
- Pregnancy
- PID
- Uterine malignancy

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### Does UAE Improve Fibroid Symptoms?

- High improvement in symptoms, satisfaction, and quality of life for up to 10 years
- Efficacy is questionable when the only symptoms are bulk related

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Complications

- Minor complications:
  - Pain
  - Chronic vaginal discharge
  - Fibroid extrusion
  - Note:
    - 33% experience prolonged or severe symptoms
    - 15% undergo readmission (severe pain, leukocytosis)

- Postembolization syndrome:
  - Low-grade fever, pelvic pain, nausea, vomiting, fatigue, and anorexia

- Infection → necrotic uterus/hysterectomy

MRgFUS

- Thermoablative technique
- Focuses several high-intensity ultrasound beams at the center of the fibroid
Candidate for MRgFUS

- Heavy menstrual cycles, dysmenorrhea, and bulk-related symptoms secondary to fibroids
- Premenopausal
- Desiring fertility is no longer a contraindication

Contraindications

- Bowel or adhesions in treatment path
- Adenomyosis
- Uterus > 24 weeks’ size during pregnancy
- Metal implants
- Weight greater than 250 lbs
- Pedunculated fibroids
- Any scar in treatment path

Does MRgFUS Improve Fibroid Symptoms?

Stewart 2006
  - 109 patients
  - Prospective cohort treated with MRgFUS
  - 71% reached clinically significant reduction of SSS at 6 months, 51% at 12 months

Stewart 2007:
  - 359 patients followed for 2 years after MRgFUS
  - Significant improvement in SSS at 3 months
  - Significant improvement in Hct for anemic patients
  - 23% required additional treatment
  - Long-term efficacy related to total leiomyoma volume coagulated at the time of treatment
RFVTA

• RF energy applied through a needle array
• Laparoscopic procedure
  – Two sites:
    1) Ultrasound guidance
    2) Energy
• General anesthesia required

RFVTA: Efficacy

• Prospective analysis of 104 patients over 3 years
• Significant change in Uterine Fibroid Symptoms and Quality of Life Questionnaire
  – Symptoms: -32.6 (95% CI, -37.5 to -27.8; \( P < .001 \))
  – QOL: 39.2 (19.2) to 38.6 (95% CI, 33.3 to 43.9; \( P < .001 \))
• Repeat intervention rate was 11%
Summary

• Medical therapies are useful for the short-term relief of symptoms
• Uterine-sparing surgical techniques are effective in treating menorrhagia and bulk-related symptoms
• UAE, MRgFUS, and RFVTA are effective minimally invasive procedures that may reduce recovery time

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Abbreviations/Acronyms
Uterine-Sparing Treatment Options for Symptomatic Uterine Fibroids

CI = confidence interval
GnRH = gonadotropin-releasing hormone
Hct = hematocrit
IUD = intrauterine device
MRgFUS = magnetic resonance–guided focused ultrasound
OCP = oral contraceptive pill
OR = operating room
PID = pelvic inflammatory disease
QOL = quality of life
RCT = randomized controlled trial
RFVTA = radiofrequency volumetric thermal ablation
SSS = symptom severity score
UAE = uterine artery embolization