As the hormonal signals between the brain and ovaries develop in adolescence, the formation of ovarian cysts (dominant follicles) is common and often physiologic.

Follicular cysts are simple cysts which are a normal physiological finding during the menstrual cycle when a developing follicle does not ovulate. After ovulation, follicles become a corpus luteum and can become hemorrhagic (containing a small amount of blood).

### ASSESSMENT
Perform a standard health history and physical exam (HPE) with probing questions regarding pubertal status, and review or obtain pelvic ultrasound (transabdominal). Pelvic exam is generally not indicated.

### MANAGEMENT/TREATMENT
Consider patient symptoms and ultrasound findings in determining follow-up.

- If asymptomatic or mild symptoms and simple/hemorrhagic cyst:
  - Less than 4 cm, reassure patient
  - 4 – 7 cm, repeat pelvic ultrasound in 6 – 12 weeks
  - Greater than or equal to 8 cm, refer to Cincinnati Children’s Gynecology
- If complex cyst, refer to Cincinnati Children’s GYN/Surgery Multidisciplinary Care.
- If follow-up ultrasound shows stable/enlarged cyst or patient is symptomatic, refer to Cincinnati Children’s Gynecology.

### WHEN TO REFER
Refer as follows to Cincinnati Children’s Gynecology:
- If patient is premenarchal
- Simple cyst ≥ 8 cm
- Complex cyst
- Persistent symptoms or stable/enlarged cyst on follow-up ultrasound

With a referral, it is beneficial to send ultrasound images and report.

If acute, severe abdominal pain, nausea, vomiting refer to Cincinnati Children’s Emergency Department for evaluation.

### FAST FACTS

#### In adolescents, most ovarian cysts are benign and will resolve spontaneously

\[ \sim \frac{1}{3} \]

of patients with ovarian cysts will present with pain, though most are diagnosed incidentally.

<table>
<thead>
<tr>
<th>Benign</th>
<th>Malignant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple</td>
<td>• Sex cord stromal (e.g., granulosa cell tumor)</td>
</tr>
<tr>
<td>• Follicular/simple</td>
<td>• Germ cell (dysgerminoma, immature teratoma)</td>
</tr>
<tr>
<td>• Cystadenoma</td>
<td>• Epithelial</td>
</tr>
<tr>
<td>• Parovarian/paratubal</td>
<td></td>
</tr>
<tr>
<td>Complex</td>
<td></td>
</tr>
<tr>
<td>• Mature teratoma</td>
<td></td>
</tr>
<tr>
<td>• Endometrioma</td>
<td></td>
</tr>
<tr>
<td>• Cystadenofibroma</td>
<td></td>
</tr>
<tr>
<td>• Tubo-ovarian abscess</td>
<td></td>
</tr>
</tbody>
</table>

### WHEN TO REFER

Refer as follows to Cincinnati Children’s Gynecology:
- If patient is premenarchal
- Simple cyst ≥ 8 cm
- Complex cyst
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With a referral, it is beneficial to send ultrasound images and report.

If acute, severe abdominal pain, nausea, vomiting refer to Cincinnati Children’s Emergency Department for evaluation.

### HPE RED FLAGS

#### Situational History
- Premenarchal
- Virilization/voice deepening
- Acute, severe abdominal pain, nausea, vomiting

#### Patient History
- History of bleeding tendencies (frequent nosebleeds, bruises easily or prior hemorrhagic cysts)
- History of ovarian torsion
- History of oophorectomy or unilateral ovary

#### Family History
- Familial/hereditary cancer predisposition (e.g., DICER-1)
- Family history of bleeding disorder

### MANAGEMENT/TREATMENT
Consider patient symptoms and ultrasound findings in determining follow-up.

- If asymptomatic or mild symptoms and simple/hemorrhagic cyst:
  - Less than 4 cm, reassure patient
  - 4 – 7 cm, repeat pelvic ultrasound in 6 – 12 weeks
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- If complex cyst, refer to Cincinnati Children’s GYN/Surgery Multidisciplinary Care.
- If follow-up ultrasound shows stable/enlarged cyst or patient is symptomatic, refer to Cincinnati Children’s Gynecology.

If you have non-urgent clinical questions about patients with ovarian cysts, email gynecology@cchmc.org.
Ovarian Cysts in Pubertal Patients

**Current Symptoms**

For urgent issues, or to speak with the specialist on call 24/7, call the Physician Priority Link at 1-888-636-7997.

**Patient Presents**
Cyst identified on ultrasound

**Standard Workup**
- Medical and Menstrual History
- Family History
- Physical Exam

**HPE RED FLAGS**

**Situational History**
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**Family History**
- Familial/hereditary cancer predisposition (e.g., DICER-1)
- Family history of bleeding disorder

**Current Symptoms**

**Acute, severe symptoms**
Ovarian torsion should be considered if:
- Acute pain, nausea and vomiting
- Unilateral enlarged ovary with or without peripheral follicles on ultrasound

Refer to Cincinnati Children's Emergency for evaluation

**None/mild symptoms (incidental finding)**

**Ultrasound findings**

**Simple or hemorrhagic**
- Less than 4 cm
- Follow-up pelvic ultrasound in 6 – 12 weeks
- Resolved
- No follow-up required

- 4 – 7 cm
- Still present:
  - Stable
  - Enlarged
  - Symptomatic

- ≥ 8 cm
  - Refer to Cincinnati Children's Emergency for evaluation

**Complex**
- Solid component
- Papillary projections
- Ill-defined borders
- Thick septation
- Ascites
- Lymphadenopathy

Refer to Cincinnati Children's GYN/Surgery Multidisciplinary Care

**Follow-up**
- Pelvic ultrasound in 6 – 12 weeks
- ≥ 8 cm
- Follow-up pelvic ultrasound in 6 – 12 weeks
- Resolved
- No follow-up required

- ≥ 8 cm
- Still present:
  - Stable
  - Enlarged
  - Symptomatic

Refer to Cincinnati Children's Gynecology