TOPICS IN OBSTETRICS & GYNECOLOGY

Clinical Obstetrics & Gynecology Continuing Education and Review

Management of Simple Ovarian Cysts

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Learning Objectives: After participating in this continuing professional development activity, the provider should be better able to:

1. *Define the criteria for diagnosis of a simple cyst and the risk of malignancy in pre- and postmenopausal patients.*
2. *Explain the circumstances for which a CA 125 level may be helpful in diagnosing and managing patients with simple ovarian cysts on imaging.*
3. *Describe the various management options and formulate a strategy for managing patients with simple ovarian cysts.*

Key Words: Ovarian cyst, Simple ovarian cyst

Definition and Epidemiology

A simple cyst is a sonographic finding that is strongly suggestive of benign pathology. An adnexal mass is described as a simple cyst if it is a round or oval anechoic structure with thin, smooth walls, and no evidence of septations, solid components, or internal blood flow on color Doppler. The true prevalence of simple cysts is unknown given that most are asymptomatic and therefore go undiagnosed. The prevalence of ovarian cysts among asymptomatic premenopausal women is approximately 6.6% based on a random sample of 335 women aged 25 to 40 years.[1] Contrastingly, 2 large cancer screening studies evaluated asymptomatic women over the age of 50 and 55 years, and reported prevalence rates of 18% and 14.1%, respectively.[2,3] An important consideration in the evaluation of adnexal masses is the exclusion of malignancy.[4] Given the low risk of malignancy and high rate of spontaneous resolution, interval surveillance is typically the recommended management for simple ovarian cysts.

Pathophysiology

In premenopausal women simple cysts are most commonly functional or physiologic (ie, cysts that develop within the ovary during the normal menstrual cycle, including follicular cysts and corpus luteal cysts).[5,6] Follicular cysts are the most common type of ovarian cyst, forming when a mature follicle fails to rupture or an immature follicle fails to undergo atresia.[5,6] If the granulosa cells persist, these cysts can continue to secrete estrogen, which may result in menstrual irregularities or intermenstrual bleeding.[5,6]

After ovulation, vascularization of the granulosa cells in a mature follicle can result in spontaneous bleeding into

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All authors, faculty, and staff have no relevant financial relationships with any ineligible organizations regarding this educational activity.

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the corpus luteum. Subsequent absorption of the blood results in a cystic compartment, although the size of the cyst may vary. Once a corpus luteum measures 3 cm or larger in diameter, it is referred to as a corpus luteum cyst.[5] These cysts may also be associated with prolonged production of progesterone, which can cause menstrual cycle irregularities.[5]

Diagnosis

Most patients with simple ovarian cysts are asymptomatic. Simple cysts are often discovered incidentally at the time of a routine gynecologic examination, or during a pelvic ultrasound ordered for a separate indication. Symptomatic patients may report pelvic pain, dyspareunia, or a sensation of bloating, fullness, or heaviness. Patients may also present with severe pain associated with ovarian cyst rupture or ovarian torsion.

Although ovarian cysts may be identified clinically, radiologically, or surgically, the designation of an ovarian cyst as "simple" is based upon radiologic criteria. Transvaginal ultrasound is the preferred imaging modality for adnexal masses, including ovarian cysts.[4] The Society of Radiologists in Ultrasound (SRU) defines a simple cyst as a "round or oval anechoic fluid collection with smooth thin walls, no solid component or septation, and no internal flow by using color Doppler imaging."[7] Simple cysts measuring less than 10 cm are classified by the SRU as O-RADS 2 or "almost certainly benign" with less than 1% chance of malignancy.[7]

Although simple ovarian cysts are usually benign, in some uncommon cases clinicians may choose to obtain serum markers to further evaluate the risk of malignancy. Elevated cancer antigen 125 (CA 125) levels are associated with epithelial ovarian cancer; however, CA 125 elevation can also be seen in pregnancy, endometriosis, pelvic inflammatory disease, and inflammatory conditions such as systemic lupus erythematosus and inflammatory bowel disease.[4] There is not currently a recommendation for the CA 125 level at which premenopausal patients with adnexal masses should be referred to gynecologic oncologists; however, a CA 125 threshold of 200 U/mL was previously used.[4] CA 125 is much more useful in the management of postmenopausal patients with adnexal lesions as the sensitivity and specificity is higher in this population.[4] Postmenopausal women with adnexal masses and elevated CA 125 (>35 U/mL) should be referred to, or managed with, a gynecologic oncologist due to an increased malignancy risk.[4]

Risk of Malignancy

When a simple cyst is identified on ultrasound, the risk of malignancy is exceedingly low, approximately 0% to 1%.[3,8] A large prospective study reported on 2763 women 50 years or older with 3259 unilocular ovarian cysts less than 10 cm in diameter.[3] They were followed with serial ultrasounds and 69.4% of the unilocular cysts resolved spontaneously. Ten of the 2763 women with previously identified unilocular cysts were diagnosed with ovarian cancer during the study period; however, all 10 had either developed another morphologic finding, had complete resolution of their initial unilocular cyst before developing cancer, or developed cancer in the contralateral ovary.[3] A more recent study assessed the histopathologic findings of 1148 patients with unilocular cysts identified on ultrasound who ultimately pursued surgical management. Of these patients, 11 masses were found to be

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Topics in Obstetrics & Gynecology (ISSN 2380-0216) is published 18 times per year by Wolters Kluwer Health, Inc. at 1800 Dual Highway, Suite 201, Hagerstown, MD 21740-6636. **Customer Service: Phone (800) 638-3030, Fax (301) 223-2400, or E-mail customerservice@lww.com.** Visit our website at LWW.com. Publisher, Stella Bebos.

malignant [0.96; 95% confidence interval (CI), 0.48–1.71].[8] Notably, the malignancy rate was higher among postmenopausal women than in premenopausal women [2.76% (6/217; 95% CI, 1.02–5.92) vs 0.54% (5/931; 95% CI, 0.17–1.25)]. Additionally, 7 of the 11 malignant masses were identified as unilocular cysts on ultrasound but found to have papillary projections or other solid components upon microscopic examination.[8]

Management

The majority of simple ovarian cysts will resolve within a few months without intervention. Studies have demonstrated that 70% to 80% of ovarian cysts resolve within 4 to 12 weeks.[1,3] Given that most simple ovarian cysts are benign and will resolve spontaneously, expectant management is recommended for asymptomatic patients with cysts less than 10 cm.

There is a paucity of data with regard to the optimal interval and frequency of repeat ultrasound evaluation for simple ovarian cysts.[4,9] For asymptomatic cysts, the SRU recommends imaging surveillance on the basis of cyst size and menopausal status of the patient. Premenopausal patients with cysts up to 5 cm do not require further imaging, whereas repeat imaging should be performed between 8 and 12 weeks for cysts measuring greater than 5 cm and less than 10 cm.[9] Postmenopausal women with cysts measuring greater than 3 cm should have repeat imaging within 1 year.[9]

Combined oral contraceptives (COCs) are frequently prescribed to women with ovarian cysts. Multiple randomized controlled trials have been performed and demonstrated that COCs do not expedite cyst resolution[10-15]; however, COCs may prevent additional functional cysts from developing. Current evidence does not support COC administration for treatment of functional cysts.[16]

Ovarian cystectomy is the definitive management for simple ovarian cysts. Cystectomy may be offered for symptomatic ovarian cysts, those that persist beyond a designated observation period, or those that are increasing in size. Additionally, ovarian cysts measuring greater than 10 cm are commonly considered an indication for surgery,[4,17] given the increased risk of malignancy beyond this size.[9] Ovarian cystectomy may be performed using minimally invasive techniques, including laparoscopy and robotic-assisted laparoscopy, depending on the clinical situation and physician comfort level. Every effort should be made to preserve as much ovarian cortex as possible, particularly in adolescents and patients who desire future fertility.

Although transvaginal aspiration is a safe and feasible option for patients with persistent, symptomatic simple ovarian cysts, it is associated with a high risk of recurrence ranging from 35% to 75%.[18-20] Furthermore, it is contraindicated in women for whom malignancy cannot be excluded, given the risk of seeding cancer cells into the peritoneal cavity. However, aspiration may be a reasonable management option for patients with prolonged symptomatic ovarian cysts who are not surgical candidates. Investigational studies have assessed the role of aspiration and intracystic injection of methotrexate for patients with persistent benign ovarian cysts and endometriomas and have demonstrated high rates of cyst resolution nearing 85%.[21-23]

Special Circumstances

Pregnancy

Ovarian cysts are relatively uncommon during pregnancy, with a reported incidence of 0.10% to 0.35%.[24-29] Ovarian cancer is rarely diagnosed during pregnancy, with an incidence of 1 in 26,000 to 1 in 500,000.[26,30] However, this number is expected to increase slightly as the average age of pregnancy continues to rise. Similar to nonpregnant patients, the majority of ovarian cysts are asymptomatic, and are an incidental finding during routine prenatal ultrasound examinations. Ultrasound remains the preferred imaging modality; however, if malignancy cannot be confidently excluded, further imaging with MRI is recommended.[31,32]

Asymptomatic simple ovarian cysts can be managed expectantly in early pregnancy with interval surveillance. The majority of these simple ovarian cysts are functional and will spontaneously resolve; one study demonstrated that 76% of simple cysts less than 5 cm resolved by 18 to 20 weeks of gestation.[33] Surgery may be considered for simple ovarian cysts larger than 6 cm that are identified, or persist, on imaging in the second trimester. Surgery can also be considered for symptomatic ovarian cysts in pregnancy.[34] Cystectomy is ideally performed in the second trimester and data support the use of laparoscopy over laparotomy when possible.[34] Left upper quadrant (Palmer's point) or open laparoscopy is often advised for laparoscopic entry during pregnancy to avoid possible Vereess needle injury.

Although rare, ovarian cysts in pregnancy can cause complications including adnexal torsion, hemorrhage, rupture, fetal malpresentation, and obstruction of labor.[31,35] Persistent cysts or those that are larger than 6 cm should be reevaluated at 6 to 8 weeks postpartum.[31]

Patients Going Through IVF Therapy

One of the known side effects of gonadotropin-releasing hormone agonists (GnRHa), commonly used in vitro fertilization (IVF) treatment, is the development of functional ovarian cysts. The incidence of GnRHa-induced functional cysts is 9.3% to 9.74%.[36,37] There are conflicting data regarding the impact of ovarian cysts on IVF cycle outcomes. Although some studies have reported decreased number and quality of retrieved oocytes and embryos, and decreased implantation and pregnancy rates among those with GnRHa-induced ovarian cysts,[36,38,39] other studies have demonstrated no difference in IVF outcomes.[40] Additionally, a 2014 Cochrane review did not identify superior outcomes with the aspiration of functional ovarian cysts before controlled ovarian hyperstimulation.[41]

Complications

Ovarian Torsion

Ovarian torsion is a gynecologic emergency that results when the adnexa rotates around its ligamentous supports compromising blood flow to the ovary. Ovarian enlargement and ovarian masses are 2 of the most common risk factors for ovarian torsion. A retrospective chart review of 87

women with surgically confirmed ovarian torsion demonstrated that 89% had an ovary larger than 5 cm at time of surgical intervention and 25% had a history of an ovarian cyst.[42]

Patients with simple cysts that are being managed expectantly, should be counseled about the risk and signs of ovarian torsion, particularly if their cyst measures 5 cm or larger. Clinical features of ovarian torsion include sudden-onset severe abdominal pain, nausea, and vomiting, and patients should be counseled to present promptly to their local emergency department should these symptoms develop.

Cyst Rupture

Ovarian cyst rupture most commonly occurs in reproductive age women with functional ovarian cysts. Rupture of serous cysts is typically asymptomatic, as serous fluid is not particularly irritating to the peritoneum; however, hemorrhagic cysts are often painful and may prompt patient presentation to the emergency department or urgent care. Rupture of a hemorrhagic ovarian cyst typically causes sudden-onset lower abdominal pain due to hemoperitoneum. Most ruptured ovarian cysts can be managed conservatively with analgesia; rarely, rupture causes hemoperitoneum and hemodynamic instability requiring urgent operative management.

Conclusion

Ovarian cysts are common, and the vast majority are asymptomatic and discovered incidentally on imaging. Transvaginal ultrasound is the preferred imaging modality and simple ovarian cysts have an exceedingly low rate of malignancy in both pre- and postmenopausal patients. Conservative management with interval surveillance is the preferred management strategy for asymptomatic cysts measuring less than 10 cm. Combined hormonal contraception may prevent future ovarian cysts from forming, however has not been found to expedite the resolution of existing ovarian cysts. Although transvaginal aspiration is a safe and minimally invasive procedure, it is associated with a high recurrence rate. Definitive management is ovarian cystectomy, which may be considered for patients who are symptomatic, have cysts larger than 10 cm, or cysts that continue to grow or do not resolve with conservative management.

Practice Pearls

- Simple ovarian cysts are most commonly functional cysts associated with the menstrual cycle, and they typically resolve spontaneously within a few months.
- Although combined hormonal contraception may prevent the development of future simple cysts, there is no evidence that it expedites the resolution of current simple cysts.
- Postmenopausal women with simple cysts and an elevated CA 125 should be referred to a gynecologic oncology specialist.
- Surgery can be considered for symptomatic cysts, cysts that persist beyond the typical observation period, or those that are larger than 10 cm in diameter.

References

1. Borgfeldt C, Andolf E. Transvaginal sonographic ovarian findings in a random sample of women 25-40 years old. *Ultrasound Obstet Gynecol*. 1999;13(5):345-350. doi:10.1046/j.1469-0705.1999.13050345.x.
2. Greenlee RT, Kessel B, Williams CR, et al. Prevalence, incidence, and natural history of simple ovarian cysts among women >55 years old in a large cancer screening trial. *Am J Obstet Gynecol*. 2010;202(4):373.e1-e9. doi:10.1016/j.ajog.2009.11.029.
3. Modesitt SC, Pavlik EJ, Ueland FR, et al. Risk of malignancy in unilocular ovarian cystic tumors less than 10 centimeters in diameter. *Obstet Gynecol*. 2003;102(3):594-599. doi:10.1016/s0029-7844(03)00670-7.
4. American College of Obstetricians and Gynecologists' Committee on Practice Bulletins—Gynecology. Practice Bulletin No. 174: Evaluation and Management of Adnexal Masses. *Obstet Gynecol*. 2016;128(5):e210-e226. doi:10.1097/AOG.0000000000001768.
5. Gershenson DM, Lentz GM, Lobo RA, et al. Benign gynecologic lesions: vulva, vagina, cervix, uterus, oviduct, ovary, ultrasound imaging of pelvic structures. In: Lobo R, Gershenson D, Lentz G, eds. *Comprehensive Gynecology*. Philadelphia, PA: Elsevier; 2022:362-408.
6. Mobeen S, Apostol R. Ovarian cyst. In: *StatPearls*. Treasure Island, FL: StatPearls Publishing; 2022. https://www.ncbi.nlm.nih.gov/books/NBK560541/?report=printable.
7. Levine D, Patel MD, Suh-Burgmann EJ, et al. Simple adnexal cysts: SRU consensus conference update on follow-up and reporting. *Radiology*. 2019;293(2):359-371. doi:10.1148/radiol.2019191354.
8. Valentin L, Ameye L, Franchi D, et al. Risk of malignancy in unilocular cysts: a study of 1148 adnexal masses classified as unilocular cysts at transvaginal ultrasound and review of the literature. *Ultrasound Obstet Gynecol*. 2013;41(1):80-89. doi:10.1002/uog.12308.
9. Andreotti RF, Timmerman D, Strachowski LM, et al. O-RADS US risk stratification and management system: a consensus guideline from the ACR Ovarian-Adnexal Reporting and Data System Committee. *Radiology*. 2020;294(1):168-185. doi:10.1148/radiol.2019191150.
10. Altinkaya SO, Talas BB, Gungor T, et al. Treatment of clomiphene citrate-related ovarian cysts in a prospective randomized study. A single center experience. *J Obstet Gynaecol Res*. 2009;35(5):940-945. doi:10.1111/j.1447-0756.2009.01041.x.
11. Ben-Ami M, Geslevich Y, Battino S, et al. Management of functional ovarian cysts after induction of ovulation: a randomized prospective study. *Acta Obstet Gynecol Scand*. 1993;72(5):396-397. doi:10.3109/00016349309021121.
12. Kilicdag EB, Tarim E, Erkanli S, et al. How effective are ultra-low dose oral contraceptive pills for treatment of benign ovarian cysts? *Fertility Sterility*. 2003;80:218-219. doi:10.1016/s0015-0282(03)01495-x.
13. Sanersak S, Wattanakumtornkul S, Korsakul C. Comparison of low-dose monophasic oral contraceptive pills and expectant management in treatment of functional ovarian cysts. *J Med Assoc Thai*. 2006;89(6):741-747.
14. Steinkampf MP, Hammond KR, Blackwell RE. Hormonal treatment of functional ovarian cysts: a randomized, prospective study. *Fertility Sterility*. 1990;54(5):775-777. doi:10.1016/s0015-0282(16)53930-2.
15. Taskin O, Young D, Mangal R, et al. Prevention and treatment of ovarian cysts with oral contraceptives: a prospective randomized study. *J Gynecol Surg*. 1996;12(1):21-24. doi:10.1089/gyn.1996.12.21.
16. Grimes DA, Jones LB, Lopez LM, et al. Oral contraceptives for functional ovarian cysts. *Cochrane Database Syst Rev*. 2014;(4):CD006134. doi:10.1002/14651858.CD006134.pub5.
17. Brun JL, Fritel X, Aubard Y, et al. Management of presumed benign ovarian tumors: updated French guidelines. *Eur J Obstet Gynecol Reprod Biol*. 2014;183:52-58. doi:10.1016/j.ejogrb.2014.10.012.
18. Duke D, Colville J, Keeling A, et al. Transvaginal aspiration of ovarian cysts: long-term follow-up. *Cardiovasc Intervent Radiol*. 2006;29(3):401-405. doi:10.1007/s00270-005-0167-0.
19. García-Tejedor A, Castellarnau M, Burdio F, et al. Ultrasound-guided aspiration of adnexal cysts with a low risk of malignancy: is it a recommendable option? *J Ultrasound Med*. 2015;34(6):985-991. doi:10.7863/ultra.34.6.985.
20. Nikolaou M, Adonakis G, Zyli P, et al. Transvaginal ultrasound-guided aspiration of benign ovarian cysts. *J Obstet Gynaecol*. 2014;34(4):332-335. doi:10.3109/01443615.2013.874406.
21. El Gergawy A, Halwagy AE, Dawood AS, et al. Efficacy of intra-cystic methotrexate injection in management of benign persistent ovarian cysts. *Open J Obstet Gynecol*. 2017;7(1):51-60. doi:10.4236/ojog.2017.71006.
22. Gupta P, Huria A. Management of ovarian cysts with percutaneous aspiration and methotrexate injection. *Niger Med J*. 2016;57(1):19-23. doi:10.4103/0300-1652.180566.
23. Mesogitis S, Daskalakis G, Pilalis A, et al. Management of ovarian cysts with aspiration and methotrexate injection. *Radiology*. 2005;235(2):668-673. doi:10.1148/radiol.2352031442.
24. Chittacharoen A, Wangpusayavisut A, O-Prasertsawat P. Adnexal masses in pregnancy. *J Med Assoc Thai*. 2005;88(suppl 2):S37-S40.
25. Cohen-Herriou K, Semal-Michel S, Lucot JP, et al. Management of ovarian cysts during pregnancy: Lille's experience and literature review [in French]. *Gynecol Obstet Fertil*. 2013;41(1):67-72.

26. Leiserowitz GS, Xing G, Cress R, et al. Adnexal masses in pregnancy: how often are they malignant? *Gynecol Oncol*. 2006;101(2):315-321. doi:10.1016/j.ygyno.2005.10.022.
27. Schmeler KM, Mayo-Smith WW, Peipert JF, et al. Adnexal masses in pregnancy: surgery compared with observation. *Obstet Gynecol*. 2005;105(5, pt 1):1098-1103. doi:10.1097/01.AOG.0000157465.99639.e5.
28. Sherard GB III, Hodson CA, Williams HJ, et al. Adnexal masses and pregnancy: a 12-year experience. *Am J Obstet Gynecol*. 2003;189(2):358-363. doi:10.1067/s0002-9378(03)00731-2.
29. Türkçüoğlu I, Meydanli MM, Engin-Ustün Y, et al. Evaluation of histopathological features and pregnancy outcomes of pregnancy associated adnexal masses. *J Obstet Gynaecol*. 2009;29(2):107-109. doi:10.1080/01443610802678804.
30. Nazer A, Czuzoj-Shulman N, Oddy L, et al. Incidence of maternal and neonatal outcomes in pregnancies complicated by ovarian masses. *Arch Gynecol Obstet*. 2015;292(5):1069-1074. doi:10.1007/s00404-015-3700-7.
31. Bhagat N, Gajjar K. Management of ovarian cysts during pregnancy. *Obstet Gynaecol Reproductive Med*. 2022;32(9):205-210. doi:10.1016/j.ogrm.2022.06.002.
32. Mukhopadhyay A, Shinde A, Naik R. Ovarian cysts and cancer in pregnancy. *Best Pract Res Clin Obstet Gynaecol*. 2016;33:58-72. doi:10.1016/j.bpobgyn.2015.10.015.
33. Bernhard LM, Klebba PK, Gray DL, et al. Predictors of persistence of adnexal masses in pregnancy. *Obstet Gynecol*. 1999;93(4):585-589. doi:10.1016/s0029-7844(98)00490-6.
34. Bunyavejchevin S, Phupong V. Laparoscopic surgery for presumed benign ovarian tumor during pregnancy. *Cochrane Database Syst Rev*. 2006;(4):CD005459. doi:10.1002/14651858.cd005459.pub2.
35. Giuntoli RL II, Vang RS, Bristow RE. Evaluation and management of adnexal masses during pregnancy. *Clin Obstet Gynecol*. 2006;49(3):492-505. doi:10.1097/00003081-200609000-00009.
36. Qublan HS, Amarin Z, Tahat YA, et al. Ovarian cyst formation following GnRH agonist administration in IVF cycles: incidence and impact. *Hum Reprod*. 2006;21(3):640-644. doi:10.1093/humrep/dei371.
37. Zeng H, Zhang C, Zhang L, et al. HCG trigger of GnRH agonist-induced functional ovarian cysts does not decrease clinical pregnancy rate in GnRHa pretreated frozen cycles: evidence from a retrospective cohort study. *Front Endocrinol*. 2022;13:876517. doi:10.3389/fendo.2022.876517.
38. Biljan MM, Lapensée L, Mahutte NG, et al. Effects of functional ovarian cysts detected on the 7th day of gonadotropin-releasing hormone analog administration on the outcome of IVF treatment. *Fertility Sterility*. 2000;74(5):941-945. doi:10.1016/s0015-0282(00)01555-7.
39. Gun Eryilmaz O, Sarikaya E, Aksakal FN, et al. Ovarian cyst formation following gonadotropin-releasing hormone-agonist administration decreases the oocyte quality in IVF cycles. *Balkan Med J*. 2012;29(2):197-200. doi:10.5152/balkanmedj.2011.019.
40. Ji H, Su Y, Zhang M, et al. Functional ovarian cysts in artificial frozen-thawed embryo transfer cycles with depot gonadotropin-releasing hormone agonist. *Front Endocrinol (Lausanne)*. 2022;13:828993. doi:10.3389/fendo.2022.828993.
41. McDonnell R, Marjoribanks J, Hart RJ. Ovarian cyst aspiration prior to in vitro fertilization treatment for subfertility. *Cochrane Database Syst Rev*. 2014;2014(12):CD005999. doi:10.1002/14651858.CD005999.pub2.
42. Houry D, Abbott JT. Ovarian torsion: a fifteen-year review. *Ann Emerg Med*. 2001;38(2):156-159. doi:10.1067/mem.2001.114303.

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1. A "simple cyst" is a _____ diagnosis.
- **A.** clinical
- **B.** radiologic
- **C.** surgical
- **D.** histologic

2. For which of the following patients with a newly identified ovarian cyst would a CA 125 level be *most* helpful in determining if they should be referred to a gynecologic oncologist?
- **A.** pregnant patient with a 5-cm simple ovarian cyst
- **B.** premenopausal patient with an 8-cm simple ovarian cyst
- **C.** postmenopausal patient with a 5-cm simple ovarian cyst
- **D.** premenopausal patient with a history of endometriosis and a 5-cm complex ovarian cyst

3. The malignancy rate of simple ovarian cysts is
- **A.** 0% to 1%.
- **B.** 3%.
- **C.** 5%.
- **D.** 10%.

4. Studies have demonstrated that 70% to 80% of ovarian cysts resolve within
- **A.** 2 weeks.
- **B.** 3 months.
- **C.** 6 months.
- **D.** 1 year.

5. The role of COCs in the management of a simple ovarian cyst is to
- **A.** prevent the cyst from increasing in size.
- **B.** expedite resolution of the cyst.
- **C.** prevent cyst rupture.
- **D.** decrease the risk of new cyst formation.

6. According to the SRU, the *best* management plan for an asymptomatic 23-year-old patient, in whom transvaginal ultrasound shows a simple, 4-cm ovarian cyst, is
- **A.** repeat ultrasound in 2 months.
- **B.** transvaginal aspiration.
- **C.** laparoscopic ovarian cystectomy.
- **D.** no further imaging.

7. At what size should surgical management be considered for asymptomatic simple ovarian cysts in a premenopausal patient?
- **A.** 4 cm
- **B.** 6 cm
- **C.** 8 cm
- **D.** 10 cm

8. The following patients each had significant pain associated with a 5-cm, simple ovarian cyst. For which patient would you be *most* likely to consider transvaginal aspiration as a management plan?
- **A.** 27-year-old woman with no medical history and CA 125 level of 5
- **B.** 43-year-old woman with no medical history and CA 125 level of 300
- **C.** 47-year-old woman with chronic obstructive pulmonary disease, diabetes mellitus, body mass index of 55, and CA 125 level of 15
- **D.** 60-year-old women with hypertension and CA 125 level of 75

9. For a pregnant patient with a persistently symptomatic 7-cm ovarian cyst, which one of the following surgical approaches is recommended?
- **A.** first-trimester laparoscopy
- **B.** first-trimester laparotomy
- **C.** second-trimester laparoscopy
- **D.** second-trimester laparotomy

10. The incidence of ovarian cyst formation with GnRHa therapy is approximately
- **A.** 1%.
- **B.** 10%.
- **C.** 30%.
- **D.** 60%.