

## IMAGES IN GYN ULTRASOUND

# Telltale sonographic features of simple and hemorrhagic cysts

CYSTIC ADNEXAL PATHOLOGY. FIRST OF 4 PARTS

↻ Myriad sonographic features characterize cystic adnexal pathology. Here, three cases of benign, resolving cysts, including when to follow-up.

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**P**elvic ultrasonography remains the preferred imaging method to evaluate most adnexal cysts, given its ability to accurately characterize their various aspects:

- Simple cysts are uniformly hypoechoic, with thin walls and no blood flow on color Doppler (**FIGURE 1**, page 22).
- Hemorrhagic cysts produce lacy/reticular echoes and clot with concave margins (**FIGURE 2**, page 22).
- Mature cystic teratomas produce hyperechoic lines and dots, sometimes known as “dermoid mesh,” acoustic shadowing, and a hyperechoic nodule (**FIGURE 3**, page 22).



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- Endometriomas produce diffuse, low-level internal echoes and a “ground glass” appearance (**FIGURE 4**, page 22).

In the first of this 4-part series on the sonographic features of cystic adnexal pathology, we focus on simple and hemorrhagic cysts. In the following parts we will highlight:

- mature cystic teratomas and endometriomas (Part 2)
- hydrosalpinx and pelvic inclusion cysts (Part 3)
- cystadenoma and ovarian neoplasia (Part 4).

An earlier installment of this series entitled “Hemorrhagic ovarian cysts: one entity with many appearances” (May 2014) also focused on cystic pathology.

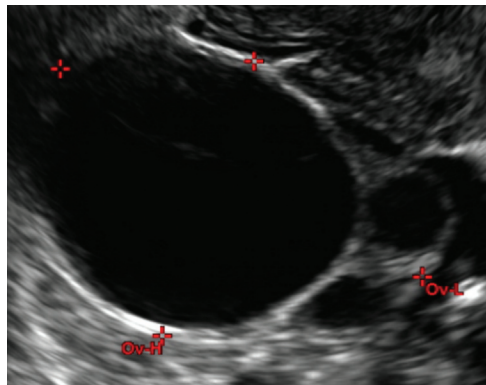
### Characteristics of simple cysts

A simple cyst typically is round or oval, anechoic, and has smooth, thin walls. It contains no solid component or septation (with rare exceptions), and no internal flow is visible on color Doppler imaging.

Levine and colleagues observed that simple adnexal cysts as large as 10 cm carry a risk of malignancy of less than 1%, regardless of the age of the patient. In its 2010 Consensus Conference Statement,<sup>1</sup> the Society of Radiologists in Ultrasound recommended

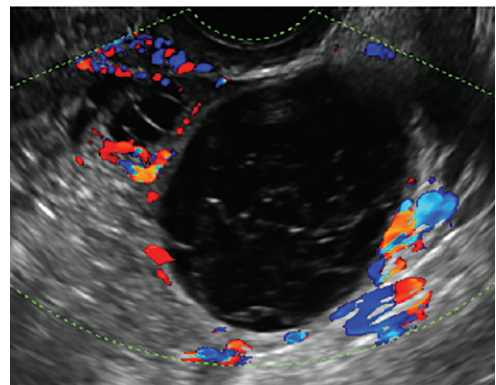
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**FIGURE 1** Simple cyst



A simple cyst in a 32-year-old patient.

**FIGURE 2** Hemorrhagic cyst



Note the lacy/reticular internal echoes and lack of internal blood flow on color Doppler.

the following management strategies for women with simple cysts:

**Reproductive-aged women**

- Cyst <3 cm: No action necessary; the cyst is a normal physiologic finding and should be referred to as a follicle.
- 3–5 cm: No follow-up necessary; the cyst is almost certainly benign.
- 5–7 cm: Yearly imaging; the cyst is highly likely to be benign.
- >7 cm: Additional imaging is recommended.

**Postmenopausal women**

- <1 cm: No follow-up necessary; the cyst is almost certainly benign.

- 1–7 cm: Yearly imaging; the cyst is likely to be benign.
- >7 cm: Additional imaging is recommended.

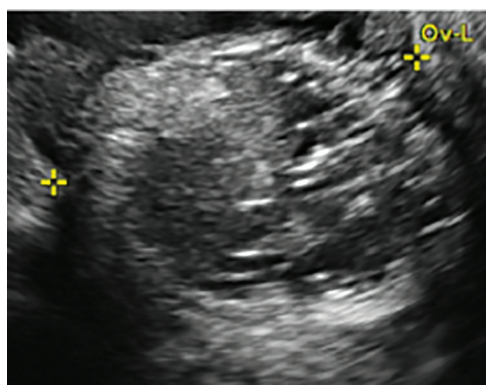
**Characteristics of hemorrhagic cysts**

These cysts can be quite variable in appearance. Among their sonographic features:

- reticular (lacy, cobweb, or fishnet) internal echoes, due to fibrin strands
- solid-appearing areas with concave margins
- on color Doppler, there may be circumferential peripheral flow (“ring of fire”) and no internal flow.

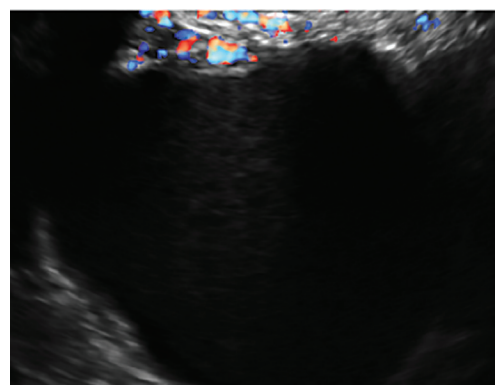
In its 2010 Consensus Conference Statement, the Society of Radiologists in

**FIGURE 3** Cystic teratoma



This cyst exhibits the “dermoid mesh” and hyperechoic lines that correspond with hair.

**FIGURE 4** Endometrioma

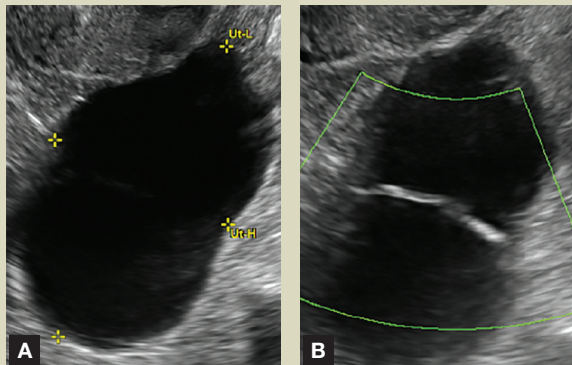


Note diffuse low-level internal echoes (“ground glass”) and no “ring of fire” on color Doppler.



**Hemorrhagic cysts can vary widely in appearance**

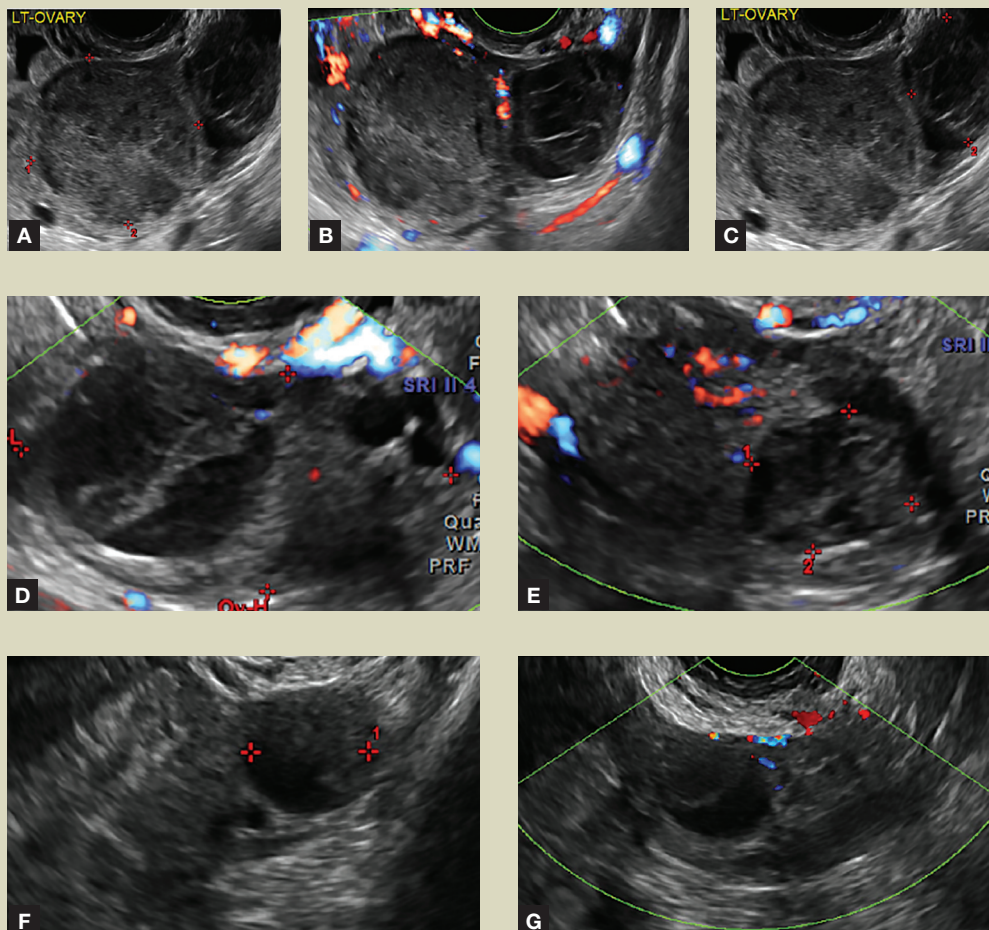
**CASE 1** Simple cyst with avascular septum



An asymptomatic postmenopausal patient has a simple cyst (A) that was noted incidentally, including a thin avascular septum (B). The cyst is stable on follow-up ultrasound at 3 and 6 months. At 9 months, the cyst is slightly increased in size. Surgical options are discussed, but the patient requests an OVA1 blood test, the results of which are normal. She elects continued close follow-up.

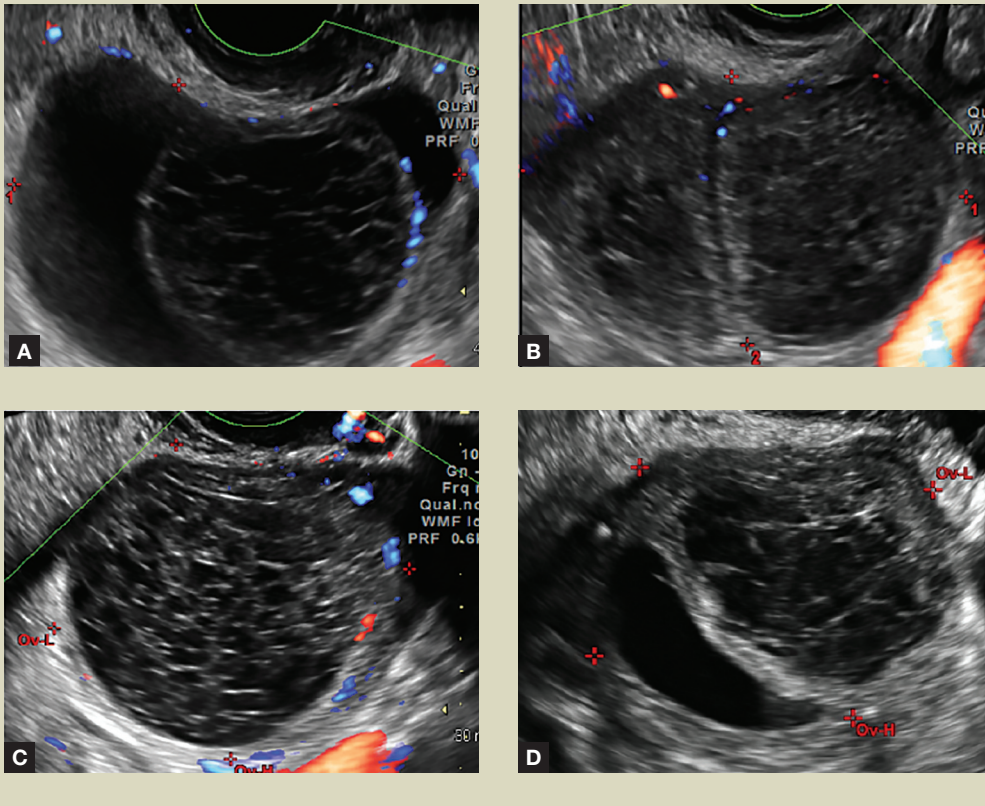
**CASE 2** Resolving hemorrhagic cysts

A premenopausal woman presents with two hemorrhagic cysts in her left ovary (A–C). Note the lacy/reticular internal echoes and color Doppler without internal blood flow. At follow-up imaging 3 months later, the cysts are resolving (D, E). At 4 months, imaging reveals that the cysts are almost completely resolved (F, G).



### CASE 3 Follow-up of hemorrhagic cyst

Another premenopausal patient is found to have a hemorrhagic cyst with a fluid level and clot, with lacy internal echoes and concave margins (A). The cyst gradually resolves over time (B = 6-WEEK FOLLOW-UP; C = 12 WEEKS; D = 18 WEEKS).



Ultrasound recommended the following management strategies<sup>1</sup>:

#### Premenopausal women

- $\leq 5$  cm: No follow-up imaging unless the diagnosis is uncertain.
- $> 5$  cm: Short-interval follow-up ultrasound (6–12 weeks).

#### Recently menopausal women

- Any size: Follow-up ultrasound in 6–12 weeks to ensure resolution.

#### Later postmenopausal women

- Any size: Consider surgical removal, as the cyst may be neoplastic. 🚫

#### Reference

1. Levine D, Brown DL, Andreotti RF, et al. Management of asymptomatic ovarian and other adnexal cysts imaged at US: Society of Radiologists in Ultrasound Consensus Conference Statement. *Radiology*. 2010;256(3):943–954.