Perivaginal Cysts

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Case Presentation

A 26-year-old nulliparous woman presented to her gynecologist with a nontender lump in the lateral aspect of the vagina. She did not report any dysuria, vaginal discharge, fever, or abdominal pain. Urinalysis was within normal limits. Urine pregnancy test was negative. Transabdominal ultrasound of the pelvis was normal (not shown). An MRI of the pelvis was then performed for further evaluation (Figure 1).

**FIGURE 1.** Axial (A) and sagittal (B) T2 MR images of the pelvis performed after patient self-administration of water soluble gel in the vagina reveals an eccentrically located cystic lesion in the right anterolateral aspect of the vagina (white arrows). The cyst fluid had intermediate signal fluid on T1 sequences (not shown) and moderately hyperintense T2 signal. The cyst contents are less hyperintense than the intravaginal gel on T2 images (yellow arrowheads). The location of the cyst in the anterolateral vagina at the level of the pubic symphysis (green oval, C) distinguishes it from other perivaginal cystic lesions near the introitus (Skene duct cyst: orange circle, C and D; Bartholin gland cyst: purple oval, C and D).
Key clinical finding(s)
Small lump protruding from the vaginal wall

Key imaging finding(s)
Unilocular cystic lesion in the upper anterolateral wall of the vagina

Differential diagnoses
Gartner duct cyst
Bartholin cyst
Skene gland cyst
Urethral diverticula

Discussion
Perivaginal cysts are usually asymptomatic and may be incidentally discovered during routine pelvic examination. When symptomatic, a small lump protruding from the vaginal wall can cause discomfort. Clinicians may biopsy the lesion or aspirate the fluid to rule out sexually transmitted infection or other pathological processes. Most cysts are benign and remain small, not requiring surgical excision. While these lesions may be detected on ultrasound (US), computed tomography (CT), or MRI, MRI has superior contrast resolution and allows for distinction between the various types of cysts, with location being the most important discriminating factor (Figures C, D).

Gartner duct cyst
Gartner duct cysts develop from incomplete regression of Wolffian ducts. They are usually in the upper anterolateral wall of the vagina just above the inferior border of the pubic symphysis (Figure C, green oval). On US, they appear as an anechoic structure in the upper vagina; transcervical US provides better differentiation than the transabdominal approach. On MRI, the cysts generally appear as well-circumscribed lesions that are iso intense to fluid. When these cysts are large enough, they can compress the urethra and cause urinary symptoms, although they are typically < 2 cm.

Bartholin gland cyst
Mucin-secreting glands originating from urogenital sinus are referred to as Bartholin glands and are commonly located posterolateral to the vaginal introitus, medial to the labia minora (Figures C, D; purple oval). Obstruction of the gland’s duct by stones or stenosis results in cyst formation. The cysts are typically round and unilocular. A key discriminator from the Gartner duct cyst is its location, found at or below the level of the pubic symphysis. This is most apparent on coronal plane imaging. On MRI, the cysts may have variable T1 signal intensity, while T2 signal intensity is uniformly hyperintense unless there is superimposed infection or proteinaceous content that results in heterogeneous T2 signal intensity. On US, Bartholin gland cysts can be imaged by a transperineal approach. Although these cysts are usually asymptomatic, occasionally infection may necessitate drainage of the cysts.

Skene gland cyst
Paired structures near the external urethral meatus with ducts draining into the urethral lumen are referred to as Skene glands. They are distinguished from urethral diverticula, which are usually midurethral. Due to their periurethral location, Skene gland cysts can cause urinary tract infections or urethral obstruction. They are seen lateral to the external urethral meatus (Figures C, D; orange circle). On MRI, they are round with hyperintense signal on T1 sequences due to proteinaceous material. T2 signal intensity will be hyperintense if uncomplicated, and may have a fluid-fluid level if complicated with debris or hemorrhage.

Urethral diverticulum
Sac-like outpouchings of the urethra or diverticula may be congenital or result from infection or obstruction. For example, a diverticulum can form when the duct of a paraurethral gland becomes obstructed, which leads to abscess formation that subsequently ruptures into the urethral lumen. The urinary stasis within diverticula predisposes patients to recurrent infections and stone formation. In females, the diverticula commonly extend from the posterolateral wall of the mid-portion of the short female urethra. During voiding cystourethrography (VCUG), they are best portrayed on postvoid images. On transrectal or transperineal US, a cystic mass with complex fluid in proximity to the urethra will be seen anterior to the vaginal wall. Transperineal US may be useful as an initial diagnostic exam; however, transrectal US will have greater specificity for small diverticula. Advantages of US over CT include better localization, lack of radiation, and capacity to differentiate solid from cystic masses. CT will demonstrate a periurethral lesion with low attenuation. On MRI, urethral diverticula will contain T1 hypointense and T2 hyperintense fluid signal intensity. Postcontrast imaging with gadolinium can be used to evaluate for infection or inflammation.

Diagnosis
Gartner duct cyst

Summary
Perivaginal cysts are not uncommon and are often discovered incidentally. US and MRI are the modalities of choice in evaluating these lesions, with MRI offering superior contrast resolution and localization, which is the most important factor in distinguishing between the diagnostic considerations. The most common perivaginal lesions include Gartner duct, Bartholin, and Skene gland cysts, as well as urethral diverticula.

References