



# Female Genital Tract Cysts

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## Abstract

Cystic diseases in the female pelvis are common. Cysts of the female genital tract comprise a large number of physiologic and pathologic cysts. The majority of cystic pelvic masses originate in the ovary, and they can range from simple, functional cysts to malignant ovarian tumors. Non-ovarian cysts of female genital system are appeared at least as often as ovarian cysts. In this review, we aimed to discuss the most common cystic lesions the female genital system.

**Key words:** Female, genital tract, cyst

## Kadın Genital Sistem Kistleri

### Özet

Kadınlarda pelvik kistik hastalıklar sık gözlenmektedir. Kadın genital sistem kistleri çok sayıda patolojik ve fizyolojik kistten oluşmaktadır. Pelvik kistlerin büyük çoğunluğu over kaynaklı olup, basit ve fonksiyonel kistten malign over tumörlerine kadar değişebilmektedir. Over kaynaklı olmayan genital sistem kistleri ise en az over kistleri kadar sık karşımıza çıkmaktadır. Biz bu derlememizde, kadın genital sisteminde en sık karşılaşılabileceğimiz kistik lezyonları tartışmayı amaçladık.

**Anahtar kelimeler:** Kadın, genital sistem, kist

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## FEMALE GENITAL TRACT CYSTS

Lesions of the female reproductive system comprise a large number of physiologic and pathologic cysts (Table 1). In order to avoid unnecessary therapy or treatment delay, in most cases, it originates in the ovary.

### I. UTERUS

#### A. Congenital Mullerian (paramesonephric) duct anomalies

If the uterine horn becomes obstructed, it may become dilated and filled with fluid or blood products and thus mimic a cystic pelvic mass such as a non-communicating rudimentary horn with uterus unicornis (1).

#### B. Congenital uterine cysts such as Wolffian duct (mesonephric) cysts

#### C. Mullerian duct cysts

#### D. Adenomyosis

Adenomyosis is a common, nonneoplastic condition that affects menstruating women, particularly those who are multiparous. In cystic adenomyosis, lesion size varies, and lesions may occur anywhere within the myometrium (1).

#### E. Cystic degeneration of intrauterine leiomyoma

An exophytic or pedunculated leiomyoma also may mimic a cystic adnexal mass if cystic degeneration is present.

#### F. Cystic adenomatoid tumor

Cystic changes of adenomatoid tumors are extremely rare, and this tumor is found subserosally in the posterior fundus or near the cornua. The wall of the cystic adenomatoid tumor is lined with flattened cuboidal epithelium, and this epithelial cells show immunopositivity for cytokeratin and calretinin (2).

#### G. Adenocystic tumor

#### H. Intramyometrial hydrosalpinges

#### I. Parasitic cysts such as echinococcal cyst

#### J. Cystic endometrial atrophy: a cystic gland dilatation combined with endometrial atrophy.

**K. Cystic endometrial hyperplasia:** is characterized by similar small endometrial cysts in an evenly thickened endometrium of over 5 to 6 mm.

## II. CERVIX UTERI

### A. Benign Diseases

**1. Cervical Nabothian Cysts:** A nabothian cyst is a common incidental finding that is usually located in the uterine cervix where one would find endocervical glands. Submucosal layer of the cervix is the most common location of these cysts, rarely they are seen deeply into the cervical wall. Nabothian cysts may occur by the inflammation and reparative processes of chronic cervicitis, following minor trauma or childbirth. Anechoic cystic structures are the ultrasonographic appearances of these cysts. Adenoma malignum (minimal deviation adenocarcinoma of mucinous type) or other glandular malignant cervical lesions can mimic nabothian cysts, but the latter are usually located deeper in the cervix (3,4). Generally, nabothian cysts do not require any therapy. If the lesion character is not clear and malignancy cannot be ruled out and if the patient relief from pain or a bothersome feeling of fullness in the vagina, surgical intervention is needed (3-5).

**2. Tunnel Cluster:** A specific type of nabothian cyst. Characterized by complex multicystic dilatation of endocervical glands (3).

**3. Uterine Cervicitis:** Uterine cervicitis is one of the most common gynecologic diseases. Symptoms or signs of acute cervicitis are a tenacious jellylike, yellow, or turbid discharge and a sensation of pelvic pressure or discomfort (3).

**4. Endocervical Hyperplasia:** Located in the endocervix and superficial layer of the cervical wall. Frequently seen in women who use oral contraceptive agents and women who are pregnant or postpartum (3).

**5. Endometrioma:** Endometriosis of the uterine cervix is estimated at 0.1- 2.4% of all endometriotic localizations. This rare localization may be totally asymptomatic or associated with nonspecific findings like postcoital or intermenstrual bleeding. The classic strategies of diagnosis and management involve colposcopy and excision (6).

### B. Malign Diseases

#### 1. Adenocarcinoma

**2. Adenoma malignum:** Adenoma malignum, which is also called "minimal deviation adenocarcinoma", is known to be a rare variant of well-differentiated mucinous adenocarcinoma of the uterine cervix, which is characterized by multilocular cystic lesions extending from the endocervical glands to the deep cervical stroma (7).

**Table 1.** Cystic lesions of the female reproductive system.

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|---|
| <b>Uterus</b>   |
| <i>Congenital Mullerian (paramesonephric) duct anomalies</i>              |
| <i>Congenital uterine cysts such as Wolffian duct (mesonephric) cysts</i> |
| <i>Mullerian duct cysts</i>   |
| <i>Adenomyosis</i>  |
| <i>Cystic degeneration of intrauterine leiomyoma</i>                      |
| <i>Cystic adenomatoid tumor</i>   |
| <i>Adenocystic tumor</i>  |
| <i>Intramymetrial hydrosalpinges</i>                                      |
| <i>Parasitic cysts such as echinococcal cyst</i>                          |
| <i>Cystic endometrial atrophy</i>   |
| <i>Cystic endometrial hyperplasia</i>                                     |
| <b>Cervix uteri</b>   |
| <b>Benign diseases</b>  |
| <i>Cervical Nabothian Cysts</i>   |
| <i>Tunnel cluster</i>   |
| <i>Uterine cervicitis</i>   |
| <i>Endocervical hyperplasia</i>   |
| <i>Endometrioma</i>   |
| <b>Malign Diseases</b>  |
| <i>Adenocarcinoma</i>   |
| <i>Adenoma malignum</i>   |
| <b>Vagina and vulva</b>   |
| <b>Cysts of embryonic origin</b>  |
| <i>Mullerian cysts</i>  |
| <i>Gartner's duct cysts</i>   |
| <i>Skene's duct cysts</i>   |
| <i>Bartholin's duct cysts</i>   |
| <i>Vaginal adenosis</i>   |
| <i>Cysts of the canal of nuck (Hydrocele)</i>                             |
| <b>Cysts of urethral origin</b>   |
| <i>Urethral caruncle</i>  |
| <i>Urethral diverticulum</i>  |
| <b>Epidermal cysts</b>  |
| <b>Endometriosis</b>  |
| <b>Ectopic ureterocele</b>  |
| <b>Rare vaginal cystic lesions</b>  |
| <b>Fallopian tubes</b>  |
| <i>Hydrosalpinx</i>   |
| <i>Hematosalpinx</i>  |
| <i>Pyosalpinx</i>   |
| <i>Inclusion cyst</i>   |
| <b>Paraovarian cysts</b>  |
| <i>Mesonephric cysts</i>  |
| <i>Paramesonephric cysts</i>  |
| <b>Ovarian cysts</b>  |
| <i>Benign ovarian cyst</i>  |
| <i>Bordeline ovarian cyst</i>   |
| <i>Malign ovarian cyst</i>  |

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### III. VAGINA AND VULVA

Benign vaginal cysts are in the majority of cases asymptomatic and are often incidentally discovered during gynecological examination for other purposes (8). True cystic lesions of the vagina originate from vaginal tissues but lesions arising from the urethra and surrounding tis-

ues can present as cystic lesions in the vagina as well (9). The incidences of cyst types in decreasing order are as follows: mullerian cysts (44%), epidermal inclusion cysts (23%), Gartner's duct cysts (11%), Bartholin's gland cysts (7%) and endometriotic type (7%). Vaginal cysts are most common in the third and fourth decades (9,10). Through physical examination the lesion should be assessed for location, mobility, tenderness, definition (smooth versus irregular) and consistency (cystic versus solid) (9). Imaging by means of ultrasound, voiding cystourethrogram (VCUG), computerized tomography (CT) or magnetic resonance imaging (MRI) may be required to characterize the lesion further (9).

#### A. CYSTS OF EMBRYONIC ORIGIN

##### 1. Mullerian Cysts

Mullerian duct cysts (MDCs) are uncommon pelvic cystic lesions, with the peak clinical incidence between the third and fourth decades of life. They usually present as small, midline, cystic masses with no symptoms and require no treatment. Occasionally, a mullerian cyst may become large enough that symptoms will warrant excision (11).

##### 2. Gartner's Duct Cysts

Gartner's duct cysts are cystically dilated wolffian duct remnants and these cysts are usually located along the anterolateral vaginal wall. Gartner's duct cysts can also be associated with abnormalities of the metanephric urinary system (9).

##### 3. Skene's Duct Cysts

Skene's (paraurethral) glands are bilateral, prostatic homologues located in the floor of the distal urethra. Obstruction of the ducts, presumed secondary to skenitis (most commonly gonorrhoea), causes formation of cysts (9). Benign, asymptomatic; if large, may cause urethral obstruction and urinary retention (3).

##### 4. Bartholin's Duct Cysts

Bartholin's glands are located bilaterally at the base of the labia minora and drain through 2- to 2.5-cm-long ducts that empty into the vestibule at about the 4 o'clock and 8 o'clock positions. Bartholin's duct cysts, the most common cystic growths in the vulva, occur in the labia majora. Two percent of women develop a Bartholin's duct cyst or gland abscess at some time in life (12,13). These benign cysts usually occur in women who are in reproductive years (12). Obstruction of the distal Bartholin's duct may result in the retention of secretions, with resultant dilation of the duct and forma-

tion of a cyst. The cyst may become infected, and an abscess may develop in the gland. If the cyst becomes infected, induration usually is present around the gland, and walking, sitting, or sexual intercourse may result in vulvar pain. Treatment is by incision and drainage. Insertion of a Word catheter, gauze wick or rubber drain may also effect good drainage (12).

#### 5. Vaginal adenosis

6. Cysts of the Canal of Nuck (Hydrocele): The processus vaginalis, also referred to as the canal of Nuck, is a rudimentary peritoneal sac that accompanies the round ligament through the inguinal canal into the labia majora. Cysts of the canal of Nuck are found in the superior aspect of the labia majora or inguinal canal (9).

#### B. CYSTS OF URETHRAL ORIGIN

1. Urethral caruncle: Urethral caruncles present as localized, red, friable lesions at the urethral meatus. They are generally seen in the postmenopausal women, and they most likely represent ectropion of the urethral wall secondary to postmenopausal regression of the vaginal mucosa (9).

2. Urethral diverticulum: A urethral diverticulum likely forms as a consequence of infected periurethral glands or cysts rupturing into the urethral lumen. Urethral diverticula are usually found on the anterior vaginal wall along the distal two-thirds of the urethra (9).

#### C. EPIDERMAL CYSTS

Epidermal inclusion cysts secondary to buried epithelial fragments following episiotomy or other surgical procedures are the most common nonembryological type of vaginal cysts. These are localized, painless, and easily confused with sebaceous cysts. Most of these cysts are asymptomatic, treatment is by simple excision (9).

#### D. ENDOMETRIOSIS

Endometriotic cysts of the vagina and vulva are rare. Usually they mimic other, more frequently encountered lesions. Not always they have the typical symptoms of endometriosis and their diagnosis is rarely determined before the surgical procedure and histopathological examination. A detailed anamnesis, thorough clinical examination and additional methods (cystoscopic, imaging, sonographic) are needed for the diagnosis. Management consists of a surgical removal of the lesions, hormonal suppression of the ovarian function and, by all means, following up the patients for appearance of a recurrence or of a lesion *de novo* (14).

#### E. ECTOPIC URETEROCELE

A ureterocele is a cystic dilatation of the distal ureter. If present with an ectopic ureter, may present as a cystic vaginal mass.

#### F. RARE VAGINAL CYSTIC LESIONS

1. Vaginitis Emphysematosa

2. Hidradenoma

3. Dermoid cyst

#### IV. FALLOPIAN TUBES

A. Hydrosalpinx: Hydrosalpinx is a common adnexal lesion that may occur either in isolation or as a component of a complex pathologic process (eg, pelvic inflammatory disease, endometriosis, fallopian tube tumor, or tubal pregnancy) that leads to distal tubal occlusion. The most common causes of hydrosalpinx are pelvic inflammatory disease and endometriosis; among women with these conditions, 8% develop hydrosalpinx (1).

B. Hematosalpinx: Hematosalpinx results from obstruction and dilatation of the fallopian tubes by blood products. It most commonly occurs in the context of endometriosis, although a tubal ectopic pregnancy, pelvic inflammatory disease, adnexal torsion, malignancy, and trauma also may cause tubal bleeding (1,15).

C. Pyosalpinx: Pyosalpinx is more likely to be bilateral, with fallopian tube wall thickening, thickened uterosacral ligaments, edema of the presacral fat, and small-bowel ileus. Pelvic inflammatory disease is one of the most common causes of acute pelvic pain; it is important to differentiate pelvic inflammatory disease from ovarian malignancy, adnexal torsion, and acute appendicitis (1).

D. Inclusion Cyst: Peritoneal inclusion cysts are seen in the serosa of the tube and are related to the frequent irritations that plague the area.

#### V. PARAOVARIAN CYSTS

Paraovarian cysts account for 10%-20% of all adnexal masses. They arise from the mesosalpinx—the superior, free border of the broad ligament—which invests the fallopian tube. They are most common in women in the 3rd and 4th decades of life (1). Two types of paraovarian cyst

A. Mesonephric cysts

B. Paramesonephric cysts

1. Hydatid cyst of morgagni: These are a common finding at laparotomy. They are paramesonephric in origin. They are usually small and under rare circumstances may undergo torsion.

## VI. OVARIAN CYSTS

The rapid development of ultrasound technology and its routine application during gynecological examinations has led to the more frequent detection of ovarian cysts. Such cysts can be diagnosed at any age or stage of a woman's life, and detected as early as the fetal stage or as late as the postmenopause. Large cysts, multiloculi, septa, papillae and increased blood flow are all suspected signs of neoplasia.

### A. Benign Ovarian Cysts

1. Follicle Cyst: Follicle cyst is found at mid cycle and its size ranges up to 25 mm.

2. Corpus Luteum Cyst:

3. Theca-Lutein Cyst: Theca lutein cysts or hyperstimulation cysts are associated with abnormal high levels of bHCG (human chorionic gonadotropine) as in multiple gestations, trophoblastic disease and most commonly due to pharmacologic hyperstimulation (16).

### B. Borderline Ovarian Cysts

1. Serous

2. Mucinous

### C. Malign Ovarian Cysts

Cystic ovarian tumors are classified on the basis of tumor origin as epithelial germ cell sex cord stromal tumors, unclassified and metastatic tumors (Table 2). The subtypes of epithelial tumors include serous, mucinous, endometrioid and clear cell tumors. They represent 60% of all ovarian and 85% of malignant ovarian neoplasms and their prevalence increases with age, peaking in the sixth and seventh decade of life (16).

**Table 2.** Classification according to the origin due to ovarian tumors

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1. Epithelial ovarian tumors
    - a. Serous
    - b. Mucinous
    - c. Endometrioid
    - d. Clear cell
    - e. Transitional cell
  2. Germ cell tumors
    - a. Dysgerminoma
    - b. Endodermal sinus tumor
    - c. Polyembryoma
    - d. Choriocarcinoma
    - e. Teratoma
  3. Sex Cord-stromal tumors
    - a. Granulosa-stromal cell
      - i. Granulosa cell
      - ii. Thecoma-fibromas
    - b. Sertoli-Leydig cell
    - c. Sex cord tumor
    - d. Gynandroblastoma
    - e. Sex cord tumor with annular tubules
  4. Unclassified and metastatic
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