Colpitis and bacterial vaginosis are diseases of the vagina. Apart from the symptoms themselves, there is always the risk of ascending infection. Moreover, inflammations of the outer genitalia are an important clinical issue. For example, vulvitis is very frequent and ubiquitous. Further, the outer genitalia are notably sensitive so that diseases can cause great discomfort for the patient, even if those diseases are harmless. This article discusses the pathogens, diagnostic tests, and treatment of vaginal diseases and vulvar disorders.

Colpitis

Colpitis (or vaginitis) refers to the inflammation of the vagina. The pathological vaginal discharge and epithelial reddening are typical symptoms.

The pH value of the vaginal milieu is normally acidic (3.8–4.5). This way, an excessive proliferation of pathogenic germs is inhibited. Lactic acid bacteria are responsible for this milieu. They are called Döderlein’s bacteria and produce lactic acid based on estrogen.

Accordingly, the vaginal flora is disturbed if, for instance, the lactic acid bacteria are inhibited. Cervical mucus and menstrual blood can lead to alkalinization. Other irritations
can be caused by a lack of estrogen, diabetes mellitus, foreign bodies (e.g. tampons), vaginal douches, sexual contact, or antibiotics.

Pathogens of Colpitis

Inflammation of the vagina can be due to several reasons. The most frequent causes are:

- Bacterial infections (bacterial vaginosis)
- Fungal infections with candida (vaginal thrush)
- Trichomoniasis

Bacterial Vaginosis

One major form of colpitis is bacterial vaginosis, which is—as the name suggests—vaginosis caused by bacteria.

Pathogens of Bacterial Vaginosis

Microscopic view of Gardnerella vaginalis

Gardnerella vaginalis can be found in the vaginal secretion of symptom-free, sexually active women. It is assumed that the transmission occurs via vaginal intercourse. Additionally, bacteria from the perianal region and bacteria of sexual partners can change the vaginal flora. This can promote the proliferation of anaerobes such as Gardnerella vaginalis. They then replace the lactic acid bacteria.

Note: Bacterial vaginosis is the most frequent form of colpitis being present in 5-8% of women. Gardnerella vaginalis is the most common cause of bacterial vaginosis.

Clinical Presentation of Bacterial Vaginosis

Neither reddening nor itching is present in this disease. Specific findings are a white-gray, very thin, sometimes foamy vaginal discharge and its fishy smell, with an alkaline pH. An ascending infection can develop as a complication.

Diagnostics of Bacterial Vaginosis

| Clinical examination | White-gray, foamy, thin vaginal discharge, fishy smell, pH of 4.8-5.5 |
Direct microscopic examination | Vaginal secretion with leukocytes, numerous bacteria, clue cells (i.e., epithelial cells fully covered with *Gardnerella vaginalis* and other bacteria)  
|  
| Cultivation | Not recommended as in most cases, mixed infections are present  

### Treatment of bacterial vaginosis

Once tests are completed, treatment should be commenced. Administration of 5-nitroimidazole (metronidazole 2 x 400 mg for 5 days) is the established treatment. The healing rate is roughly 95%. **The simultaneous treatment of sexual partners is not recommended.**

### Vaginal Thrush

Vaginal thrush refers to a *fungal infection that leads to colpitis*. In over 80% of cases, these fungal infections are caused by *Candida albicans*. In rare cases, they are caused by *Candida glabrata*. Frequently, candida is already present in the vulva and vagina.

Thus, vaginal thrush is normally an *endogenous infection*. If the vaginal flora is disturbed, the proliferation of germs is promoted. Hormonal fluctuation (e.g., pregnancy or oral contraceptives), antibiotic therapy, or immunodeficiency can also promote infection.

#### Clinical Presentation of vaginal thrush

*Itching, burning, pain, and discharge* are typical symptoms of vaginal thrush. Vaginal thrush normally occurs together with vulvitis.

#### Diagnostics of vaginal thrush

| Clinical examination | White crumbly discharge |
Microscopic direct specimen | Confirmation through pseudomycelia. The detection of sprout cells only shows the colonization of yeasts.
--- | ---
Microbiological detection | Only if clinical examination and direct specimen yield no significant results.

### Treatment of vaginal thrush

A first step is **local treatment with nystatin and imidazole medication** in the vagina and on the vulva; 5–7 days are usually sufficient.

If the vaginal thrush is recurrent, systemic therapy with fluconazole becomes necessary. Treatment of the partner is not necessary since it is an endogenous infection. However, the rate of recurrence is relatively high.

In case of a chronic recurrent vaginal thrush, high-dose **fluconazole** for several weeks is recommended. Further, regular prophylactic antimycotic treatment is indicated in some cases.

### Trichomoniasis

![Micrograph showing Trichomoniasis](https://creativecommons.org/licenses/by-sa/3.0)

Trichomoniasis is caused by **Trichomonas vaginalis**. It is a **facultative pathogenic protozoon**. It affects the vagina, glandular ducts, urethra, and less frequently, the bladder, rectum, and cervix.

Transmission occurs via sexual contact. The risk for infections is 70%. Recently, the number of infections has notably regressed and is now below 1%.

### Clinical presentation of trichomoniasis

A characteristic sign of trichomoniasis is a **severe, liquid, foamy discharge**, which is sometimes **greenish-yellow**. Further, symptoms like burning, itching, and occasional dysuria and reddening can be observed.

**Note:** In 90% of men and women, trichomoniasis can be asymptomatic.

A potential complication of trichomoniasis is accompanying bacterial vaginosis.
Diagnostics of trichomoniasis

<table>
<thead>
<tr>
<th>Clinical examination</th>
<th>Foamy vaginal discharge, pungent smell, reddening</th>
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<tr>
<td>Microscopic direct specimen</td>
<td>Moving trichomonads with surrounding leukocytes</td>
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<td>Cytological cervical smear</td>
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Treatment of trichomoniasis

Systemic administration of **5-nitroimidazoles** (1×2 g metronidazole) has a success rate of 90%. Treatment of the partner is necessary. **Condoms can prevent transmission.**

Unspecific Colpitis

Unspecific colpitis cannot be traced to one particular pathogen.

Vulvitis

Vulvitis is defined as **dermatitis of the labia** of women. In almost all cases, it is accompanied by a form of vaginitis.

Etiology of vulvitis

![Image: Candida albicans, by GrahamColm. License: CC BY 3.0](image)

Primary causes of the disease can be **fungi, bacteria, or viruses**. Secondarily, an inflammation of the outer genitals can also be due to mechanical causes or hormonal changes.

Pathogens of vulvitis

In 95% of the cases, the fungus **Candida albicans** is the most frequent pathogen of vulvitis. Bacteria like **A-streptococci, Staphylococcus aureus, and Treponema pallidum** are the second most frequent cause. Viruses like **herpes simplex** and **varicella-zoster** are rare triggers.

Secondary causes can be mechanical; for example, **maceration**, which is a consequence of obesity. Inflammation of the outer genitalia can also be caused by chemical irritation of the skin due to vaginal douches or detergents. Vulvitis can also be a secondary consequence of **pregnancy** and estrogen deficiency during **post-menopause**. In patients with **diabetes mellitus**, infections with **Candida albicans** are frequent.
Note: Herpes genitalis causes the most painful vulvitis.

Clinical presentation of vulvitis

There are 3 main symptoms that should be known, being the most prominent manifestations of inflammations of the outer genitalia:

- **Burning pain** during walking, urination, and sexual intercourse.
- **Vaginal discharge**
- **Pruritus**: The scratching caused by the strong itching often worsens the infections. If children present with this kind of itching, worms should be considered as a differential diagnosis.

Examination shows the typical signs of inflammation; reddened and swollen skin is visible. **Candidiasis** is often accompanied by a clumpy white discharge. The native specimen and Sabouraud agar show evidence of the fungal infection. In herpes genitalis infections, fine vesicles can be seen. If an inflammation of the hair follicle is present (i.e., **folliculitis**), one often observes a small reddish area that is painful and sensitive to pressure.

Treatment of vulvitis

**Clotrimazole**, which is an antimycotic, is applied locally for fungal infections. Bacterial vulvitis can be treated locally with the antiseptic **povidone iodine** and orally with **cephalosporin**. If an **S. aureus** infection is left untreated, folliculitis can develop into an abscess. This must be surgically managed. For relief of pain and itching, patients can apply **cortisone balm** and **chamomile hip baths**.

Bartholinitis

Bartholin glands are located on the inside of the **inner labia**. Their excretory duct lies in the introitus area. Bartholinitis is an inflammation of the **Bartholin gland** that leads to painful swelling. In most cases, it is unilateral. If the excretory ducts are obstructed due to stasis of the glandular secretion (Bartholin cyst), an infection with intestinal germs can occur.
Etiology of bartholinitis

- Neisseria gonorrhoeae
- Staphylococcus aureus
- Escherichia coli
- Anaerobe bacteria (Bacteroides, peptococcus, peptostreptococcus)

**Note:** Primary infection with a pathogen is much less common than the infection due to an obstructed duct.

Clinical presentation of bartholinitis

If the secretory ducts are obstructed, **swelling** occurs, which can reach the size of a ping-pong ball. This cyst is painful when infected and can even lead to **problems walking**.

Treatment of bartholinitis

In case of a large cyst or an abscess, treatment involves **marsupialization**, which is performed under general anesthesia. If the bartholinitis is recurrent, **extirpation** of the Bartholin gland can be performed.

Condylomata Acuminata

Condylomata acuminata are **papillary, pointy epitheliomas**, which mainly affect the vulva, vagina, porta uteri, and the anal region.

Etiology of condylomata acuminata

Infection with **HPV** (human papillomavirus) can trigger the formation of condylomata acuminata. Serotypes 6 and 11 are responsible for changes like pointy condylomas. Infection with **HPV-16 and -18 can lead to the formation of cervical or anal carcinoma**

**Note:** Almost 20% of sexually active women are HPV-positive with serotypes 6 and 11.
Clinical presentation of condylomata acuminata

Examination shows pointy, papillary changes of epithelial cells. They are arranged in a cockscomb-like manner.

Histology shows koilocytes. These are squamous epithelial cells with a perinuclear halo. Koilocytes are a sign of HPV infection.

Treatment of condylomata acuminata

Treatment options depend on the severity of the disease. The first step is topical treatment. In cases of mild infection, denaturation using podophyllin cream or 60% trichloroacetic acid is possible. For extreme infections, surgical treatment using electric sling abrasion or CO2 laser has to be performed.

Note: All therapeutic measures have a recurrence risk of 25%.

Lichen Sclerosus: Vulvar Itching

Lichen sclerosis is a chronic disease and degenerative change of the dermis. It comprises a shrinking of the vulva and sclerotization of subcutaneous fat tissue.

Etiology of lichen sclerosus

Due to the marked pruritus, scratch defects can be noted. Examination shows depigmentation, scratch defects, and superinfection. The shrinking is accompanied by shiny vulvar skin.
Clinical presentation of lichen sclerosus

Due to the marked pruritus, scratch defects can be noted. Examination shows depigmentation, scratch defects, and superinfection. The shrinking is accompanied by shiny vulvar skin.

Diagnostics of lichen sclerosus

Histological examination involving punch biopsy or excision should be performed in order to exclude vulvar carcinoma and vulvar intraepithelial dysplasia.

Treatment of lichen sclerosus

Lichen sclerosus is treated with cortisone creams for at least 4 weeks after the patient is free of complaints. Fatty ointments should be applied before any event of skin stress (urination, defecation, cohabitation). Treatment with corticoids is supposed to prevent skin shrinking and synechia (adhesion of the labia).

As long as there is no contraindication, systemic administration of estrogen should be considered. In any case, however, local estrogen treatment should occur. When symptoms persist, laser therapy or surgical interventions like denervation may be necessary.

References


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