



## Vulvovaginitis

Vulvovaginitis is usually related to infections secondary to *Gardnerella*, *Trichomonas*, or *Candida* (yeast) species. Vaginal discharge, pruritus, burning sensation, foul-smelling odor, superficial dyspareunia, and dysuria may be the presenting complaint. With candidiasis, the patient may describe a thick, white, cottage cheese-like discharge associated with pruritus. [Vulvovaginitis](#) is common, affecting women of all ages. Vulvovaginitis is an inflammation of the vagina and vulva, most often caused by a bacterial, fungal, or parasitic infection.

Normally, a woman may have a vaginal discharge, the amount and consistency of which varies during the course of the menstrual cycle; however, vulvovaginitis causes a symptomatic increased vaginal discharge. Other symptoms associated with this condition are pain with intercourse, pain with urination, and odor. Women with vulvovaginitis tend to be embarrassed or are worried about sexually transmitted diseases (STD). Self-treatment is usually the norm and close to 50% ineffective. In this country alone, millions of dollars are wasted on over-the-counter antifungals because of self-treatment for candidiasis. Providers may also be uncomfortable or do not have adequate time to diagnose the true etiology and may treat the wrong condition. Thus, vulvovaginitis is probably underdiagnosed.

Bacterial vaginosis typically presents with an unpleasant fishy-smelling discharge that is more noticeable after unprotected intercourse. A thin, gray-white vaginal discharge that is homogeneous may adhere to the vaginal walls and be present at the introitus (vaginal opening). The discharge is usually moderate to profuse. Itching and inflammation are unusual in bacterial vaginosis. The absence of inflammation is the basis for the term vaginosis rather than vaginitis. Bacterial Vaginosis is secondary to bacterial overgrowth and not due to tissue inflammation. The organisms associated with bacterial vaginosis are *Gardnerella vaginalis*, *Mycoplasma hominis*, and *Mobiluncus*, a facultative anaerobe. Summarizing, practically any condition changing the vaginal milieu may result in vulvovaginitis. Bacterial vaginosis is the most important cause of vulvovaginitis. Estimating the number of patients presenting with bacterial vaginosis is difficult because *G vaginalis* can be recovered from the vagina in 30-50% of asymptomatic women.

Trichomonal infection may be asymptomatic or may produce a profuse, frothy, yellow-

gray, homogenous discharge. This discharge may adhere to the vaginal walls and may not be present at the vaginal introitus. In contrast to bacterial vaginosis, vulvar and vaginal erythema and edema with *Trichomonas* species often are present. Punctate hemorrhages may be visible on the vagina and cervix (2% of cases). *Trichomonas vaginalis* affects 2-3 million women annually in the United States. The organism also is detected in 30-40% of men who are exposed to women with *T vaginalis*. The prevalence of *T vaginalis* infection at clinics treating sexually transmitted diseases (STDs) varies from 8-31%. In men, *T vaginalis* may account for as many as 17% of cases of nongonococcal, nonchlamydial urethritis. *T vaginalis* infection appears to be more common in the southern United States.

*Candida* species infection typically is found as an isolated infection, heralded by pruritus. A thick, odorless, white, cottage cheese-like discharge often is found adhering to the vagina. Erythema (redness), edema, and excoriation may be present. Dysuria and urinary frequency occasionally may be present. Candida can occur in women who are not sexually active. Candidal vulvovaginitis is considered slightly less common than bacterial vaginosis, yet, 3 out of every 4 women in the United States will have at least 1 bout of vulvovaginal candidiasis (VVC) during their lifetime. Patients with recurrent or severe vulvovaginal candidiasis warrant a screening test for diabetes.

## **Pathophysiology**

The normal vaginal epithelium cornifies (develops into a thickened layer of epithelial cells) under the influence of estrogen, protecting women against infection. A normal vaginal discharge consists of 1-4 mL of fluid that is white or transparent, thick, and odorless. This physiologic discharge is formed by sloughing epithelial cells, normal bacteria, and vaginal transudate. The discharge may be noticeable during pregnancy, oral contraceptive pill use, or at mid menstrual cycle, close to the time of ovulation.

The normal pH of vaginal secretions is 4.0-4.5. The pH is maintained by lactobacillus, which produces hydrogen peroxide and lactic acid; diphtheroids; and *Staphylococcus epidermidis*. Lactobacillus is found in 62-88% of women. Vaginal pH may increase with age, phase of menstrual cycle, sexual activity, contraception choice, pregnancy, presence of necrotic tissue or foreign bodies, and use of hygienic products or antibiotics.

After menopause, most women experience some vaginal atrophy as estrogen levels fall. Incidence of atrophic vaginitis depends on how it is defined. Vulvovaginitis related to infection is much less common after menopause. Desquamative inflammatory vaginitis, an exception, has an unknown etiology, but a Gram stain of culture often reveals

streptococci. This is treated with intravaginal clindamycin cream or a topical or intravaginal estrogen. Postirritation vulvovaginitis may occur in women undergoing pelvic irradiation for cancer.

### **Factors that may contribute to vaginitis:**

- Diabetes mellitus, Oral contraceptive use, Antibiotic use, and Immunodeficiency
- Wiping the anus from posterior to anterior, wearing tight-fitting synthetic undergarments, and using vaginal irritants such as bubble baths
- Recent upper respiratory infection or pharyngitis can lead to group A beta-hemolytic streptococci (GABHS) vaginitis
- Vaginal pruritus, especially at night, suggests pinworm infection
- Itching, soreness, bleeding, and vaginal discharge; bloody and foul-smelling discharge may suggest a vaginal foreign body
- Asymptomatic vaginal discharge often occurs in the months prior to menarche and represents a physiologic response to increasing estrogen levels
- Skin conditions (ie, eczema, psoriasis, seborrhea) occasionally involve the vagina
- Number of sexual partners, method of birth control
- A new sexual partner increases the risk of STD and pregnancy.
- Recent antibiotics use
- High estrogen oral contraceptive pills
- Hygienic practices (daily use of panty liners and feminine products)
- Irritants such as soaps, baths, spermicides, perfumes, douches, and creams can cause vulvovaginitis
- Tight-fitting, synthetic undergarments can increase moisture, exacerbating vaginitis Social stressors including homelessness, threats to personal safety, and insufficient resources, which appear to increase the risk.
- Increased in postmenopausal women with vaginal bleeding or spotting, pain with urination, itching, watery discharge, or pain with intercourse and decreased sexual activity.

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