Vulvovaginitis

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Vaginal discharge

- Common presentation of women to the STI clinic
- Can be physiological or pathological
- Related with some common STIs

Physiology/ vulvovaginal area

- The vulva is the first line of defense to protect the genital tract from infection.
- Contaminants often collect in the vulvar folds
- Increased moisture, sweating, menses, and hormonal fluctuations influence vulvar microbial growth.
- Vulvar skin differs in hydration, friction, permeability, and visually discernible irritation and is more susceptible to topical agents
- The non-keratinized vulvar vestibule is likely to be more permeable than keratinized skin.

- Genital skin is unique in that it is covered by a thin stratum corneum containing large hair follicles, making it easier for microbial and other substances to permeate the skin.

- The vagina is the fibromuscular canal extending from its external opening in the vulva to the cervix

- Composed mainly of smooth muscle covered with a non-keratinized epithelial lining, which, until the menopause, is thick, with folds kept moist by fluid secreted through the vaginal wall and mucus from cervical and vestibular glands

Microflora

- Maintenance of the microbiota ratio is anticipated to play a key role in overall vulvovaginal health.

- The normal vulvar flora includes vaginal, urethral, and colonic microbes as well as microbes characteristic of intertriginous skin.

- Microbiota of the vulva is diverse, with no single species common to all women and these may include staphylococci, micrococci, diphtheroids, lactobacilli, streptococci, Gram-negative rods, yeasts, and species of fecal origin.

- A healthy vagina is dominated by *Lactobacillus*

- A non-sporing, Gram-positive bacilli that produce lactic acid, resulting in an acidic environment (pH 3–4).

- Prevent colonization by other bacteria in the vagina via competition for epithelial cell receptors and through inhibition of growth by generation of antimicrobial compounds in collaboration with innate host defenses (e.g. periodic hormonal cycling promoting glycogen release and constant sloughing of bacteria-containing epithelial cells).

- The composition of the vaginal microflora fluctuates as a function of:

1. Internal factors (age, hormonal shifts (e.g. during menarche, menses, and pregnancy), and infections)

2. External factors (e.g. hygiene practices, sexual intercourse, the use of antibiotics, and hormone replacement therapy).

PH

- Vulvar pH could be expected to be around 4.7
- Vaginal PH (average pH 3.5) 3.8 to 4.2 during the menstrual cycle.
- Various factors may affect vulvar pH, including endogenous factors (e.g. humidity, sweat, vaginal discharge, menstruation, urine and fecal contamination, anatomical folding, genetics, and age) and exogenous factors (e.g. soap, detergents, cosmetic products, lubricants and spermicides, occlusion with tight clothing or sanitary pads, shaving, and depilation products).
- Prolonged drying of the vulvar skin has been shown to significantly reduce its PH.

Table 1. Physiological characteristics of the vulvar and vaginal area.

	Vulva	Vagina
Tissue structure	Mons pubis, labia, clitoris, and perineum: keratinized, stratified squamous structure with sweat glands, sebaceous glands, and hair follicles Vulvar vestibule mucosa: non-keratinized	Fibromuscular canal composed mainly of smooth muscle with a lining of aglandular, non-keratinized stratified squamous epithelium
pH	3.5–4.7	Premenarche: 7.0 Reproductive age: 3.8–4.4 Menopause: 6.5–7.0 (without hormone therapy); 4.5–5.0 (with hormone replacement therapy)
Microflora	Lipophilic and non-lipophilic diphtheroids; coagulase-negative staphylococci, micrococci, and lactobacilli; streptococci; Gram-negative rods; Gram-negative bacilli; *Neisseria*; *Gardnerella vaginalis*; and/or yeasts	*Lactobacillus* spp., *Atopobium vaginae*, *Megasphaera* spp., *Leptotrichia* spp., *Gardnerella vaginalis*, *Staphylococcus aureus*, and/or *Candida albicans*

Vulvovaginitis

- Vaginitis is the general term for disorders of the vagina caused by infection, inflammation, or changes in the normal vaginal flora.
- Around 90% of vaginitis is caused by infection, mainly bacterial vaginosis
- Less common causes include: vaginal atrophy/atrophic vaginitis, cervicitis, foreign body, irritants and allergens, and several rarer entities, including some systemic medical disorders, vulvovaginal candidiasis, and trichomoniasis

Prepubertal vaginal discharge

Prepubertal

- Vaginal discharge is the most common reason for referral of a prepubertal girl to a gynaecologist.
- Non-specific bacterial vulvovaginitis is the most frequent cause.
- Associated symptoms include soreness and itching, which can be chronic and distressing.
- Vulval hygiene and the use of appropriate emollients form the successful management.
- The most frequent age of referral is between 3–10 years.
- ?Sexual abuse

Why?

- The labia are small, undeveloped and there are no labial fat pads or pubic hair.
- The anus is anatomically very close to the vagina. Thus, there is the risk of faecal contamination, which can lead to infection.
- The vulval and vaginal skin are hypoestrogenic and, therefore, thin and delicate.
- The squamous epithelium is undifferentiated and unestrogenised and the pH is neutral.

- Vulvovaginitis is the most common cause of prepubertal vaginal discharge and can be infective or chemical.

- Other rare causes include insertion of a foreign body and vaginal/vulval tumours.

- Non-gynaecological causes, such as threadworm infection, must be considered, as well as unusual congenital anomalies such as ectopic ureters

Vulvovaginitis

- The most common symptom is vaginal discharge (62–92%)
- The discharge can be clear, yellow or green and may be offensive smelling.
- Other symptoms of vulvovaginitis include redness and soreness, pruritus and dysuria.
- Vaginal bleeding is an unusual symptom of vulvovaginitis
- More serious causes, such as tumours, precocious puberty and sexual abuse, must be excluded before attributing bleeding to vulvovaginitis.

P/E

- On inspection of the genital area:

1. The skin around the vagina will look reddened and inflamed and this may extend around the anus.

2. There may be a pool of discharge at the posterior fourchette.

3. There may be excoriation of the genital area if it is itchy.

Non-specific bacterial vulvovaginitis

- Most commonly, the vulvovaginitis is non-specific, with mixed bacterial flora.

- Vaginal cultures will be reported as non-specific skin flora or will show mixed anaerobes or coliforms from the gut.

- Poor personal hygiene is a common trigger factor, as the onset of symptoms usually occurs when the child has responsibility for her own anal hygiene; for example, on first attending nursery or school.

Infective causes

- The most common infective agent to be found in prepubertal vaginal discharge is the group A betahaemolytic streptococcus.
- Acute, with a seropurulent vaginal discharge.
- May be associated with dysuria and an inflamed vulva.
- Group A streptococci are sensitive to penicillin.
- Topical antibiotics are of no use for treatment of vaginal infection.

- Haemophilus influenzae is the second most common cause of vulvovaginitis.

- Girls are more likely to have recurrent symptoms with Haemophilus.

- Most strains are sensitive to penicillin.

- Candida is a very uncommon cause of vulvovaginitis in the prepubertal girl

- Predisposing factors→ recent course of antibiotics, diabetes or the wearing of nappies.

- If present, the symptoms are similar to those of adult women: pruritus and a white, curd-like discharge. Inflammation of the vulva and perineal area and white plaques adherent to the vagina often occur.

- Treatment is usually with a topical antifungal agent.

- Some systemic infections such as varicella, measles and rubella can cause an associated vulvovaginitis, which can be severe.

- Resolution is usually complete

- A secondary bacterial infection from vulval organisms can occur and prolong symptoms.

Vulval dermatitis

- Most commonly causes vulval soreness but this can be associated with discharge.
- Irritant dermatitis has been reported as a result of using soap or bubble bath and playing in a sandpit, as well as prolonged contact of urine and faeces against the skin.
- Avoidance of the irritative agent should lead to resolution of symptoms.
- Allergic contact dermatitis may develop as a result of prolonged exposure to irritant substances, such as perfumes and clothing dyes.
- Accurate allergy patch testing may help to identify the culprit

Vulval skin disorders

- Present with vulval irritation and soreness.
- Vaginal discharge is usually a less prominent feature
- Atopic eczema can affect up to 15% of young

- Emollients are the mainstay of treatment
- The use of mild or moderate strength steroid cream may be necessary for short periods.
- Lichen sclerosis usually presents with itching and soreness.
- Vaginal discharge is unusual unless there is a secondary infection but bleeding can occur from purpura and blister formation
- Symptoms can be persistent and may only resolve completely with the approach of puberty and increasing estrogenisation of the vulva and vagina.

Foreign bodies

- Unusual cause of vaginal discharge.
- They should be considered in a girl who keeps presenting with recurrent or chronic vaginal discharge and in the presence of bloodstained or very offensive discharge.
- A vaginal discharge with an irritant vulvitis is usually the first sign.
- The discharge may be purulent, foul smelling and occasionally bloodstained

Tumors

- Rare tumors such as embryonal rhabdomyosarcoma, mesonephric carcinoma and clear cell adenocarcinoma of the vagina or cervix all present with a bloodstained discharge.

- Sometimes a tumor is visible at the introitus.

- Vaginal bleeding or bloodstained vaginal discharge needs urgent referral to an appropriate specialist for evaluation.

Sexual abuse

- Must always be considered in girls with recurrent or persistent vaginal discharge or bleeding.
- If the child is old enough it is important to ask her about any inappropriate touching of the genital area.
- The majority of children who are abused do not have any physical complaints related to trauma or infection

Postmenopausal vaginal discharge & Vulval conditions

- Following menopause, and as estrogen levels fall, vaginal pH increases.
- This alkaline pH is associated with increased colonization with pathogenic microbes.
- Vulvar skin disorders are also more prevalent after the menopause.
- Dermatoses must also be considered.

Vulvovaginal atrophy

- Present in 95% of women.
- No discharge.
- Dysparunia, dryness.
- TT: Topical estrogen.

Vulval candidiasis

- Irritation and soreness.
- Contributing factors: Obesity, DM, antibiotic use.
- May become chronic.
- Satellite lesions, excoriations, inflammation and edema.
- Treatment: Prolonged topical antifungal therapy.

Lichen Sclerosus

- Can affect women at any age
- Chronic inflammation.
- ?Autoimmune
- Severe pruritis, worse at night.
- Figure of 8 distribution.
- Dysparunia pruritis and discomfort.
- Skin :erythema, atrophy, hyperketosis(extra white).
- Fusion of labia minora, clitoris , narrowing of introitus.
- 4% Squamous Cell Carcinoma
- Treatment: ultrapotent corticosteroids.

Lichen Planus

- Polygonal, Purple Plaques
- Wickham’s striae (intense erythema and erosions on the vulva, which is often surrounded by reticulate white striae)
- Glazed appearance
- Usually, erosive
- Dysparunia and pain
- ?Autoimmune
- Not linked to hormonal status
- Treatment: High potency corticosteroids

5 Ps: Pruritic (itchy), Planar (flat surface, like a plateau), Purple, Polygonal (non-circular, straight edges) Papules (small raised skin bumps).

Lichen Simplex

- Chronic inflammation
- Severe pruritis, worse at night
- Linked to stress and low iron stores
- Exacerbated by chemical irritants, contact dermatitis.
- Treatment : The mainstay of treatment is general care of the vulva avoiding potential irritants and use of emollients and soap substitutes. Antihistamines and corticosteroids


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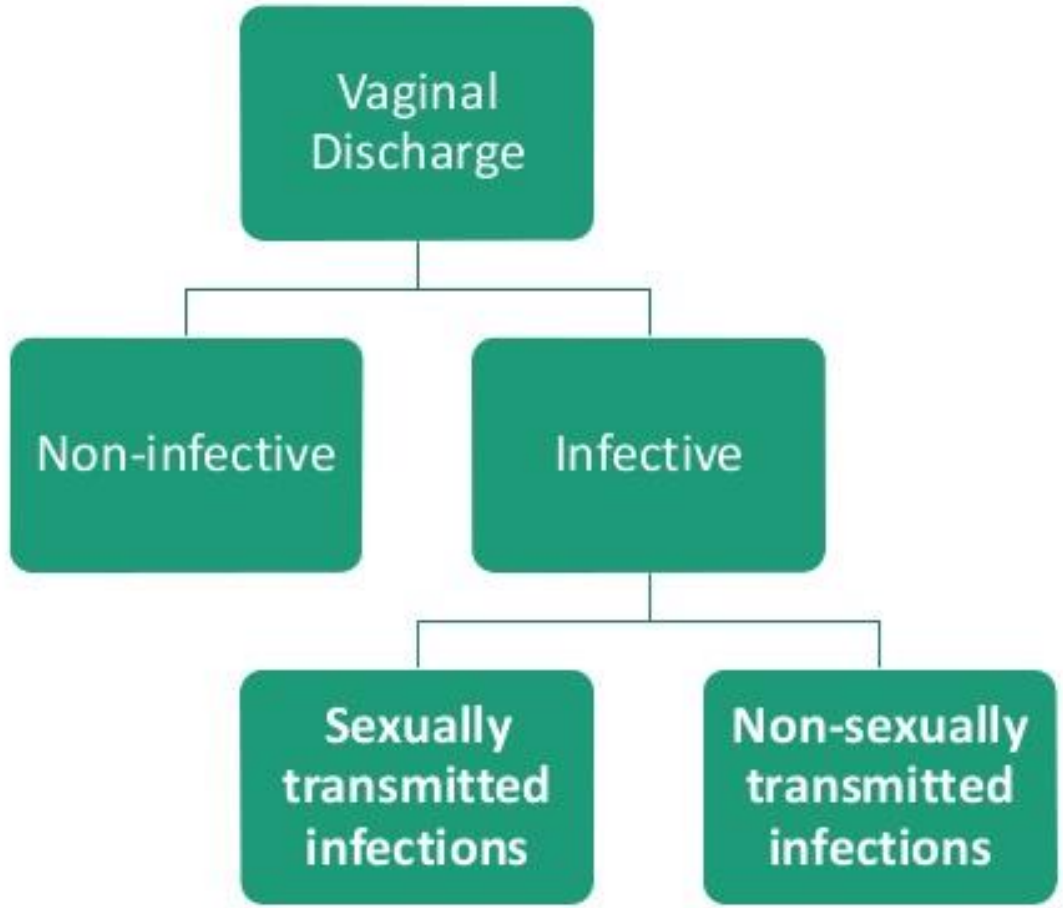
Extramammary Paget’s disease

- Rare
- Mostly seen in post-menopausal women
- Main symptom: pruritis
- On examination, discrete lesions usually affect hair bearing skin and not the mucosa, and have a florid eczematous appearance with lichenification, erythema and excoriation.
- Might be associated with adenocarcinoma
- Imaging must be done to breasts, GI and urinary tracts
- Treatment: Surgical excision and biopsy

Reproductive years

DIFFERENTIAL DIAGNOSES



NON-INFECTIOUS VAGINAL DISCHARGE

Physiological

- Menstrual cycle variations- *Midcycle discharge*
- Sexual arousal
- Pregnancy

Other

- Cervical polyps
- Foreign bodies - eg, retained tampon, conception
- Vulval dermatitis
- Chemical irritation
- IUCD use
- Oral contraceptive use

INFECTIOUS VAGINAL DISCHARGE

Sexually transmitted infections

- Chlamydia
- Gonorrhoea
- Herpes simplex
- Trichomonasis
- Vulvovaginal candidiasis

Non-sexually transmitted infections

- Bacterial vaginosis

- For a year or two before puberty, until after menopause, it is normal and healthy for a woman to produce a vaginal discharge.

- Consists of bacteria and desquamated epithelial cells that slough from the vaginal walls together with mucus and fluid (plasma) produced by the cervix and vagina.

- The quantity and texture of this change during the menstrual cycle: vaginal discharge is thick, sticky, and hostile to sperm at the beginning and end of the menstrual cycle when estrogen is low and gets progressively clearer, watery, and stretchier as estrogen levels rise prior to ovulation.

- The discharge may become more noticeable at times (“physiological leukorrhea”), such as at mid-menstrual cycle close to the time of ovulation or during pregnancy or use of estrogen-progestin contraceptives.

- Diet, sexual activity, medication, and stress can also affect the volume and character of normal vaginal discharge

Bacterial Vaginosis

- Most common cause of discharge in women of child-bearing age.
- Overgrowth of anaerobic organisms(Gardenella vaginalis) mainly.
- Decrease in Lactobacilli.
- PH 4.5→7
- Sexually active and non-sexually active
- Black, Smoking, IUCD use
- 50% Asymptomatic
- Offensive, Fish-smelling vaginal discharge
- Thin white discharge on the wall of vaginal vestibule.

Diagnosis

- Amsel's criteria→3 out of 4

Bacterial vaginosis

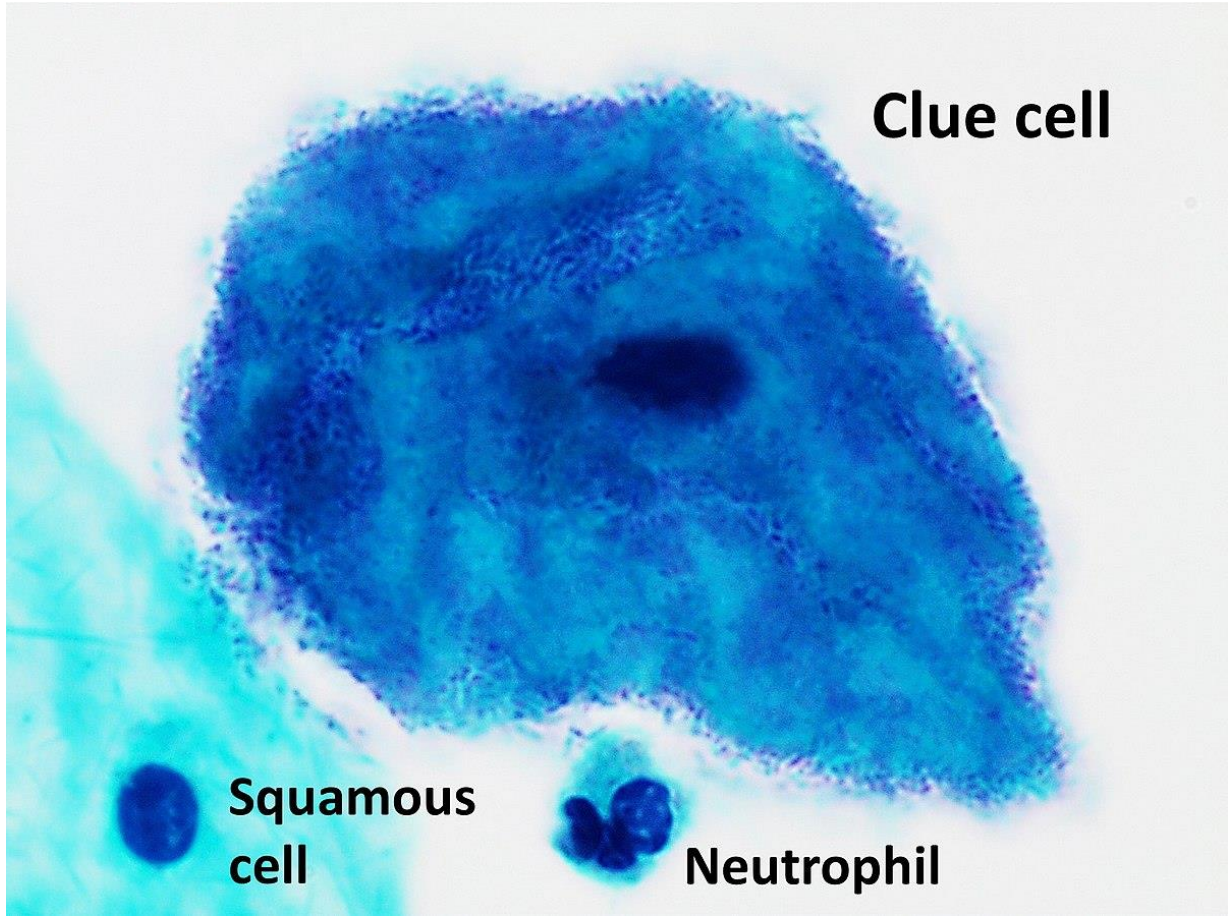
- In a patient suspected of BV,diagnosis can be made using

Amsel's criteria

(introduced 1984)

(**3 out of 4 criteria below required to establish the diagnosis**)

- Nonviscous homogenous white uniformly adherent vaginal dischagre.
- High pH
- Clue cells –vaginal squmaous cells covered by bacterial rods which blur the border of squamous cells
- Whiff test – adding 10% KOH to vaginal secretions produces an amine odour.


Clue cell
Squamous cell
Neutrophil

- **Treatment**

1. Advice against vaginal douching, antiseptics and vaginal shower gels.
2. Antibiotic treatment : 1. Symptomatic women
   2. Undergoing surgery
   3. Pregnant women

Metronidazole 500mg 1*2 for 5-7 days

Metronidazole vaginal gel once daily for 5 days

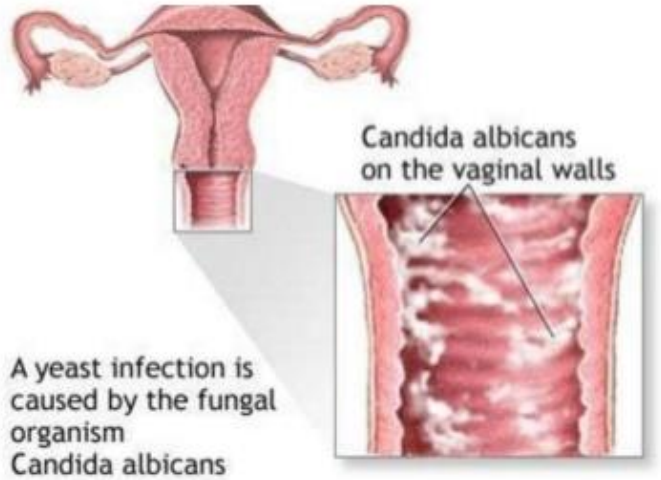
Clindamycin vaginal cream 2% once daily for 7 days

** Do not treat male partner

Vulvovaginal Candidiasis

VULVOVAGINAL CANDIDIASIS

- Oval budding fungus
- Pathogen – 80-92% *Candida albicans*
- Non *albicans* species
  - *C.glabrata*
  - *C tropicalis*
  - Yeast



- **CLINICAL FEATURES**

1. Thick white (curd like)
2. non offensive vaginal discharge
3. Vulval itching
4. Vulval soreness
5. Superficial Dyspareunia (due to the vulval irritation)

Signs

Erythema

Fissuring

Vulval oedema

Predisposing Factors

- Diabetes mellitus
- Long term steroids
- Pregnancy
- Prolonged antibiotic use
- Immune suppression

- Samples→ Vaginal swabs from lateral fornix

- Investigations→ Microscopy of vaginal smear
  Gram stain
  Hyphae and spores Culture
  Sabouraud agar medium

Management

- Good hygiene
- Remove predisposing factors
- Oral Triazoles drugs- Fluconazole 150mg stat or Itraconazole 200mg bd
- Topical applications- Clotrimazole, Miconazole, Nystatin
- Pessaries and clotrimazole cream intravaginally daily for 7-14 days

**No epidemiological treatment for partner

Trichomoniasis

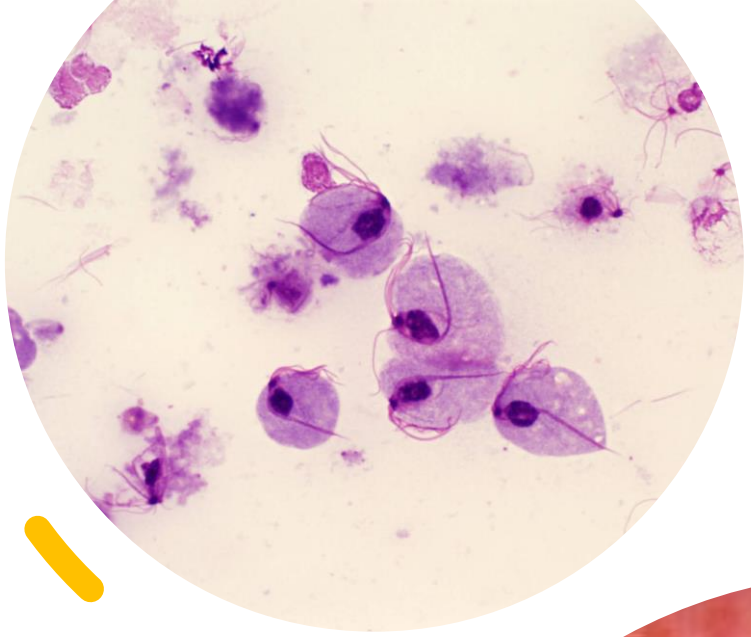
- Organism→ Trichomonas Vaginalis
- Flagellated protozoan found in the vagina, urethra, paraurethral glands
- Almost exclusively sexual in adults
- 10-50% Asymptomatic

- Symptoms: 1. Very foul smelling discharge 70% (Variable!! thin and scanty→ yellow, profuse and thick)
  2. Itching
  3. Dysuria

Risk factors

- People with more sexual partners are more likely to become infected.
- Older women may be more likely than younger women to be infected.
- Black women may be more likely to be infected.
- Other risk factors for infection may include limited education and low socioeconomic status.

- Vulvitis, vaginitis and cervicitis
- Classic→ Strawberry Cervix

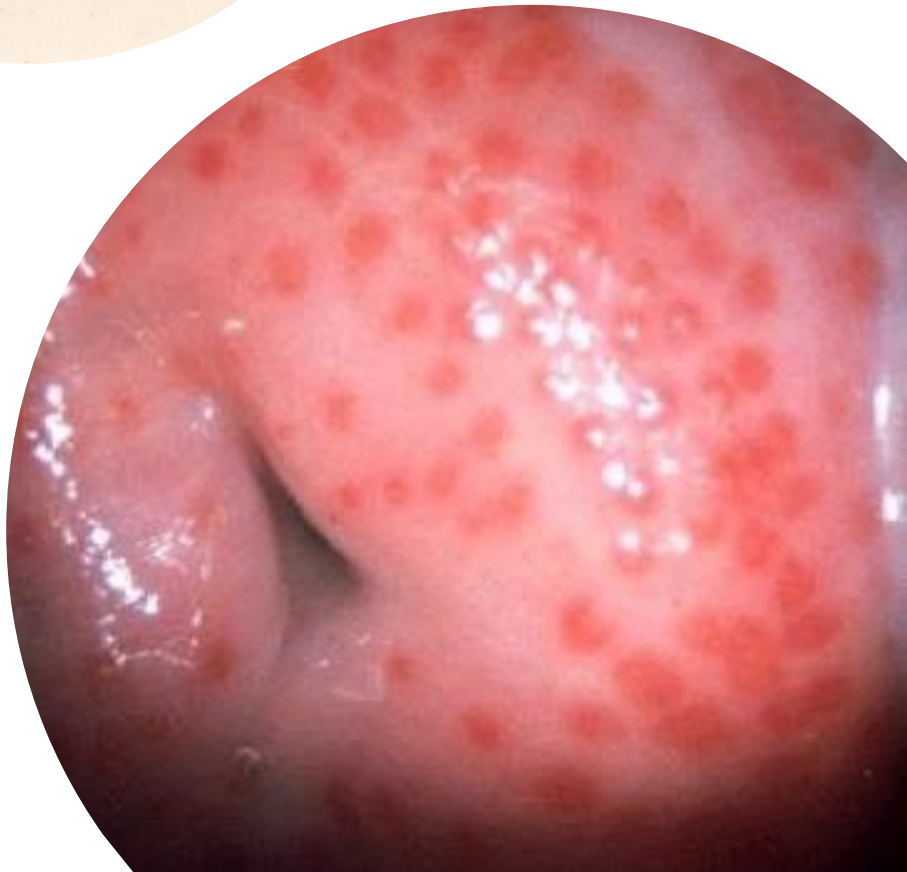


- Diagnosis:

A wet smear from the posterior fornix

Culture Observed for motile Flagellated organism

Giemsa Culture



- **Treatment**

Metronidazole/tinidazole 2g stat orally

Metronidazole 500mg 1*2 for 5-7 days

** Treat partner

** Avoid sexual relationships until both partners complete treatments

THE END