



# Lower Genital tract infections & sexually transmitted diseases

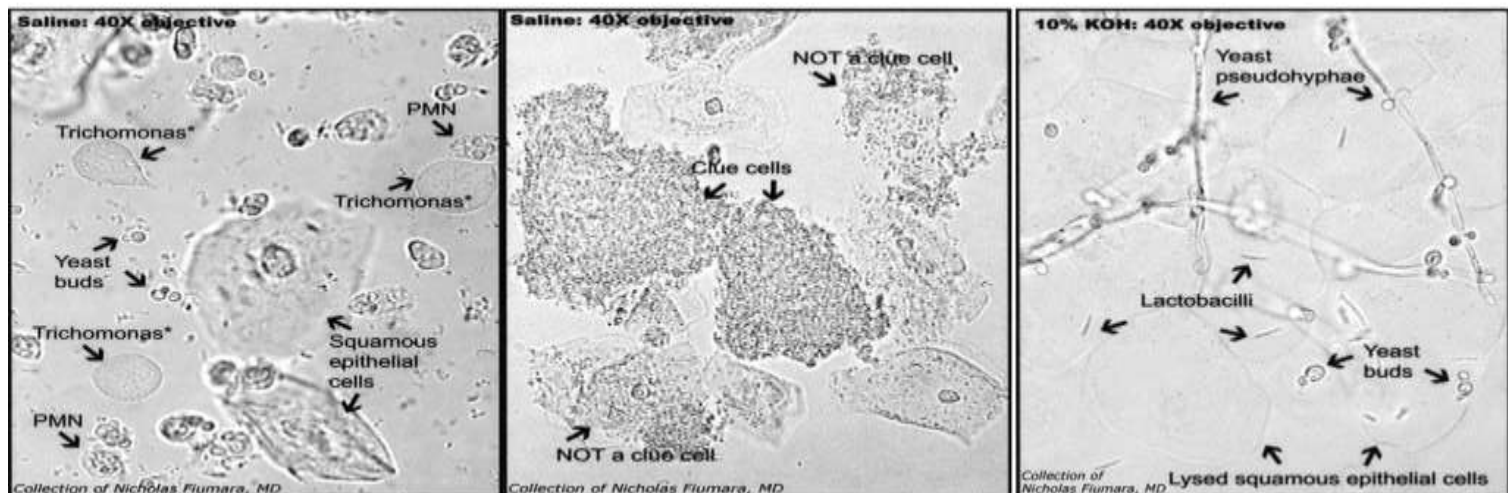
# The Normal Vagina

- The normal vaginal flora is mostly aerobic, the most common is hydrogen peroxide producing lactobacilli.
- The microbiology of vagina depends on:  
Vaginal PH : normally  $<4.5$ . (3.8-4.2)  
Availability of glucose for bacterial metabolism.
- Normal vaginal secretions are clear, odorless, floccular in consistency, and usually located in the dependent portion of the vagina (posterior fornix).
- They are composed of vulvar secretions from sebaceous, sweat, Bartholin and skene glands, transudate from the vaginal wall, exfoliated vaginal & cervical cells, cervical mucus,, endometrial & oviductal fluids

- Analysis of the vaginal secretions is done by wet mount preparation
- Gram stain reveals predominance of gram +ve rods (Lactobacilli).

## Wet mount reading

➤ Assess for clue cells, hyphae, yeast buds, trichomonas, WBCs



# Type of lesions:

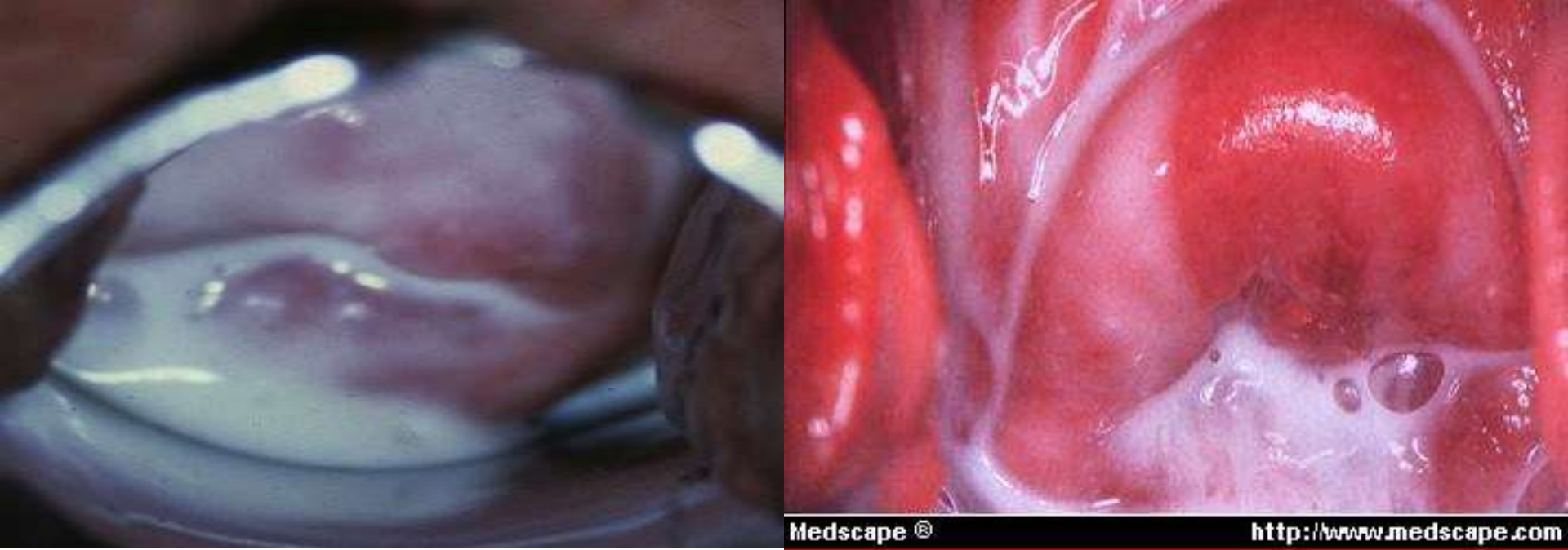
- \*\* Vaginitis
- \*\* Ulcerative lesions
- \*\* vulval infections
- \*\* cervicitis

# **VAGINITIS**

- It is usually characterized by pruritus, vaginal discharge and/or vulvar itching & irritation, vaginal odor & dyspareunia might be present.
  
- Diseases most frequently associated with vaginitis:
  - 1- Bacterial vaginosis
  - 2- Trichomoniasis
  - 3- Candidiasis

# Bacterial Vaginosis

- It has previously been referred to as nonspecific vaginitis or *Gardnella* Vaginitis (Most common vaginitis)
- An Alteration of normal vaginal bacterial flora that results in the loss of hydrogen peroxide producing lactobacilli and an overgrowth of predominantly anaerobic bacteria (*Prevotella* sp. & *Mobiluncus* sp. In <1% normal vaginal flora), *G. vaginalis* & *Mycoplasma hominis*.
- Unknown trigger of disturbance on normal vaginal flora.



**\*\* BV characterized by homogenous milky or creamy (white to gray) discharge that smoothly & thinly coats the vaginal walls.**

# Diagnosis

## ➤ (Amsel criteria):

- 1- Fishy vaginal odor, that is particularly noticeable following coitus & vaginal discharge present.
- 2- The PH of the secretions is  $>4.5$  (usually 4.7-5.7).
- 3- Microscopy of vaginal secretions reveals an increased number of clue cells while leukocytes are absent. In advanced cases,  $>20\%$  of the eipthelial cells are clue cells
- 4- Whiff test: addition of 10% KOH to the vaginal secretions releases fishy aminelike odor



- \*\* When a gram stain is used, determining the relative concentration of lactobacilli, Gram negative & Gram-variable rods & cocci (*G. Vaginalis*, *Prevotella*, *Porphyromonas* and *peptostreptococci*) and curved Gram –negative rods ( *Mobiluncus*).
- \*\* Culture of *G. Vaginalis* is not recommended as a diagnostic tool because it is not specific
- \*\* Associated with mid-trimester miscarriage, preterm labour, rupture of membranes and endometritis.

# Treatment

## **\*\* Recommended Regimens for nonpregnant woman:**

- 1- Metronidazole 500 mg orally twice a day for 7 days.
- 2- Metronidazole gel, 0.75%, one full applicator (5 g) intravaginally, once a day for 5 days

**\*\*The overall cure range from 75%- 84% with the above regimens.**

- 3- Clindamycin cream, 2%, one full applicator (5 g) Intravaginally at bedtime for 7 days.
- 4- Clindamycin 300mg, orally twice daily for 7 days.
- 5- Clindamycin ovules, 100mg, intravaginally once at bedtime for 3 days

**\*\*The results of clinical trials indicate that a woman's response to therapy and the likelihood of relapse or recurrence are not affected by treatment of her husband. Therefore, routine treatment of husbands is not recommended.**

# Trichomonas Vaginitis

- It is caused by the sexually transmitted flagellated parasite (*Trichomonas Vaginalis*): exists in trophozoite form.
- It often accompanies BV, which can be diagnosed in as many as 60% of patients with *Trichomonas* vaginitis.



# Symptoms & signs

- About 50% of women infected with trichomoniasis do not have symptoms. The severity of discomfort varies greatly from woman to woman and from time to time in the same woman. Symptoms can be worse during pregnancy or right before or after a menstrual period.
- **Principle symptom:** Persistent vaginal discharge (profuse, extremely frothy, greenish, foul smelling).
  - \*\* Vaginal itching, irritation, pain and dyspareunia
  - \*\* Patchy redness of the genitals, including labia and vagina with colpitis macularis (Strawberry cervix) may be observed.
  - \*\* Frequent, painful dysuria, if urine touches inflamed tissue.
  - \*\* Generalized vaginal erythema with multiple small petechiae (Angry looking vagina)

# Diagnosis:

- It is usually performed by microscopy of vaginal secretions, but this method has a sensitivity of only approximately 60%–70% and requires immediate evaluation of wet preparation slide for optimal results.
- Microscopy of the secretions reveals motile trichomonads and increased numbers of leukocytes.  
Clue cells may be present of the common association with BV.
- The Whiff test may be positive.
- The PH of the vaginal secretions is usually  $>5$ .

- \*\* *Culture* is the most sensitive and specific commercially available method of diagnosis. In women in whom trichomoniasis is suspected but not confirmed by microscopy, vaginal secretions should be cultured for *T.vaginalis*.
  
- \*\* DNA probe test, which detects genetic material (DNA) of the *Trichomonas* organism. This test is rarely needed to identify trichomonas and is usually available only in research studies.

## Morbidity:

- \*\* Patients with T.V are at increased risk for postoperative cuff cellulitis following hysterectomy.
- \*\* Pregnant women are at increased risk of premature rupture of the membranes and preterm delivery.
- \*\* Women should be tested for other STDs, mainly N. gonorrhea and chlamydia trachomatis. Serologic testing for syphilis and HIV infection should also be considered.



## Treatment:

- Metronidazole 2 g orally in a single dose                      OR  
Tinidazole 2 g orally in a single dose.
- Alternative Regimen Metronidazole 500 mg orally twice a day for 7 days.

\*\*Both regimens are highly effective and have cure rates of about 95%.

- Husband should also be treated. Patients should be instructed to avoid sex until they and their husbands are cured.

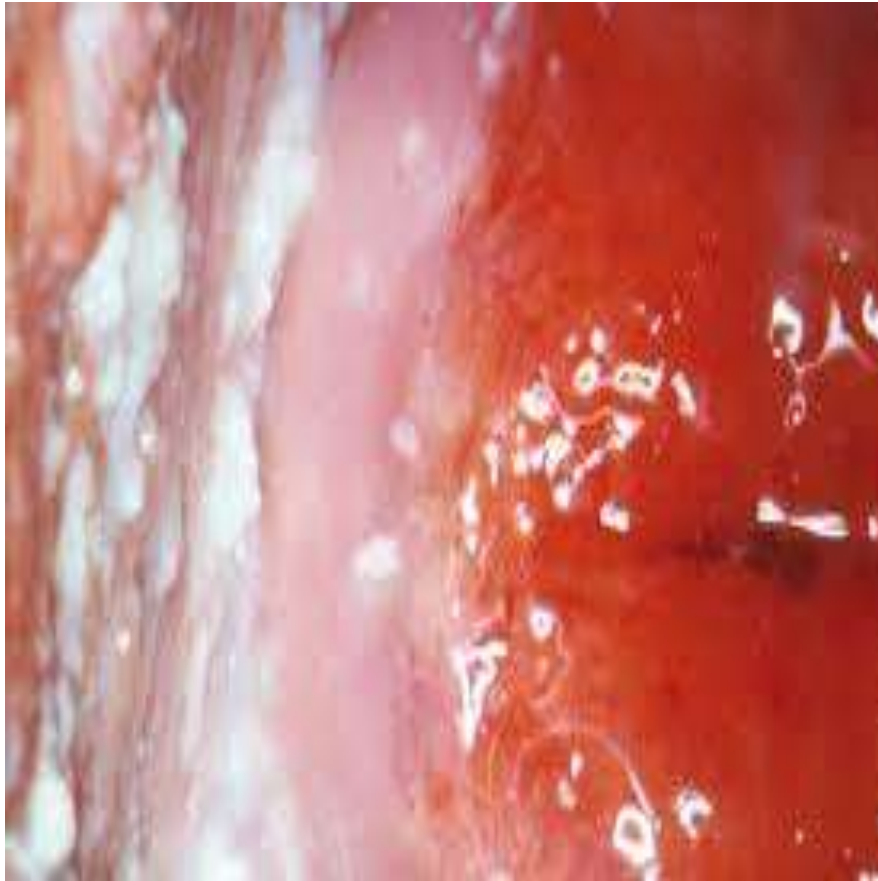
# Vulvovaginal Candidiasis (Monilial vaginitis)

- An estimated 75% of women will have at least one episode of VVC, and 40%–45% will have two or more episodes.
- *Candida Albicans* is responsible for 85-90% of vaginal yeast infections. Other species of candidia, such as *C. glabrata* and *C. tropicalis* can cause vulvovaginal symptoms and tend to be resistant to therapy.

# Diagnosis:

➤ The symptoms consist of:

- 1- Vaginal discharge which can vary from watery to homogenously thick that typically resembles cottage cheese.
- 2- Vulvar pruritis, vaginal soreness, dyspareunia, vulvar burning and irritation may be present.
- 3- External dysuria (splash dysuria) may occur.
- 4- Examination reveals erythema & edema of the vulvar skin and labia. Discrete pustulopapular peripheral lesions may be present.  
The vagina may be erythematous with an adherent, whitish discharge. The cervix appears normal



## Vulvovaginal Candidiasis



Source: Health Canada, Sexual Health and STI Section, Clinical Slide Gallery

- 5- The PH of the vagina in patients with VVC is usually normal <4.5.
- 6- The Whiff test is negative.
- 7- The results of the saline preparation of the vaginal secretions usually are normal, although there may be a slight increase in the number of inflammatory cells in severe cases. Fungal elements (mycelia or budding yeast) appear in 80% of cases.
- 8- Fungal culture is recommended to confirm the diagnosis in case of +ve findings on examination but microscopy is negative where presumptive diagnosis can be made.

# Classification of VVC

Uncomplicated	Complicated
Sporadic or infrequent in occurrence	Recurrent symptoms
Mild to moderate symptoms	Severe symptoms
Likely to be C.albicans	Non albicans Candida
Immunocompetent women	Immunocompromised women ( DM, immunosuppression)

# Treatment:

## Uncomplicated VVC:

- The topically applied azole drugs are more effective than nystatin. Treatment with azoles results in relief of symptoms and negative cultures in 80%–90% of patients who complete therapy. Short-course topical formulations (Single dose and regimens of 1–3 days) effectively treat uncomplicated VVC.
- Oral Agent: Fluconazole 150 mg oral tablet, one tablet in single dose for uncomplicated VVC.

**\*\* Intravaginal Agents:**

Butoconazole 2% cream 5 g intravaginally for 3 days OR  
Clotrimazole 1% cream 5 g intravaginally for 7–14 days OR  
Clotrimazole 100 mg vaginal tablet for 7 days OR  
Miconazole 2% cream 5 g intravaginally for 7 days,  
200mg vaginal supp for 7 days

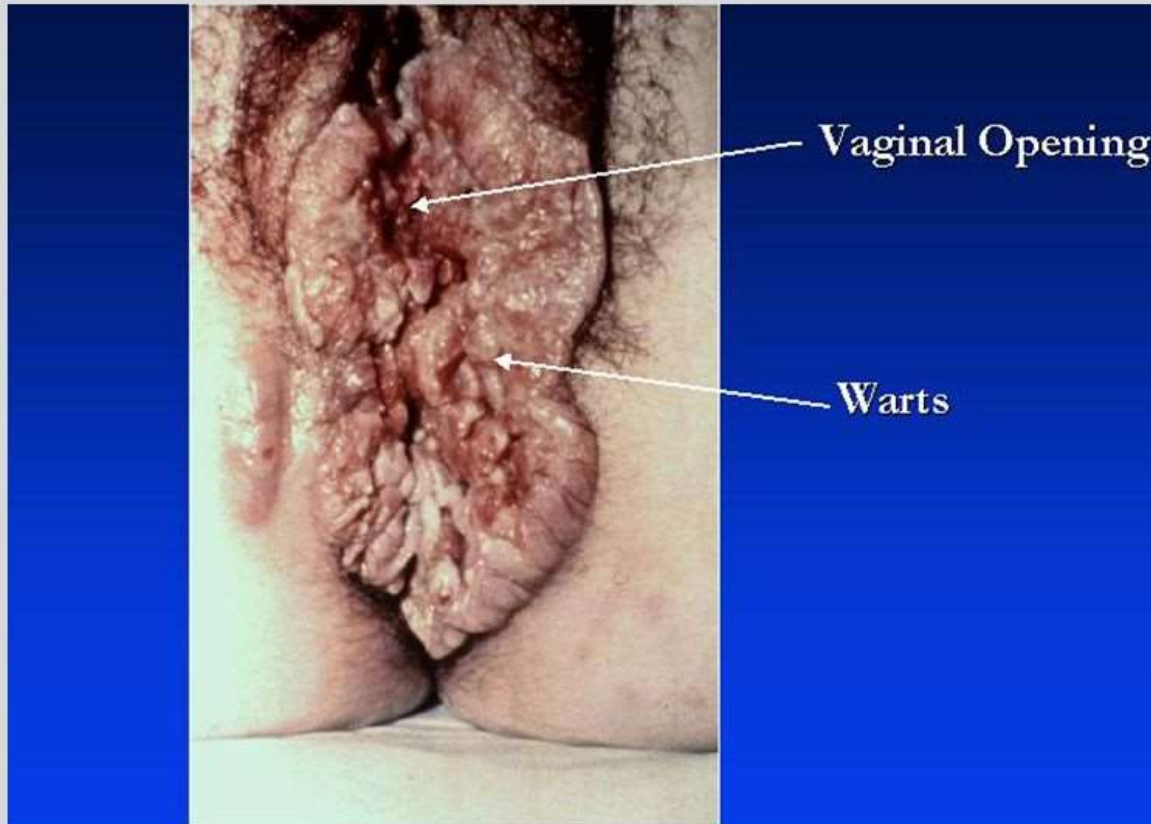
**\*\* Women with complicated VVC benefit from an additional 150mg dose of fluconazole given 72 hours after the first dose.**



# Genital warts

- Caused by Human Papilloma virus (HPV) , mainly type 6 & 11 (condyloma acuminata).
- Peak incidence among 15 -25 yrs , soon after onset of sexual activity.
- Soft , sessile, and or verrucous lesions.
- Usually multifocal & asymptomatic , although itching, burning , bleeding & pain can occur.
- External genital warts are highly contagious >75%.
- Usually diagnosed clinically.

## Genital Warts (HPV) on the female genital



**\*\*The goal of the treatment is the removal of the warts, it is not possible to eradicate the viral infection. Treatment is more successful in patients with small warts that have been present for less than one year**

**\*\*Treatment modalities : application of cytotoxic or keratolytic agents , surgical excision ,cytodestructive techniques & immune modulators.**

Table 15.5 Treatment Options for External Genital and Perianal Warts

<i>Modality (%)</i>	<i>Efficacy (%)</i>	<i>Recurrence risk</i>
Cryotherapy	63-88	21-39
Podophyllin 10-25%	32-79	33-60
Podofilox 0.5%*	45-88	
Trichloroacetic acid 80-90%	80-90	36
Electrodesiccation or cautery	94	22
Laser†	43-93	29-95
Interferon	44-61	0-67

**Safe in pregnancy**

**Pregnancy category C**

**Safe in pregnancy**

\*May be self-applied by patients at home.

†Expensive, reserve for patients who have not responded to other regimens.

# MOLLUSCUM CONTAGIOSUM



- Caused by POX virus infection.
- Spread by skin contact , autoinoculation, fomites.
- Appearance of dome shaped papules with central umbilication , 2-5 mm diameter.
- Usually asymptomatic but may be pruritic & become inflammed & swollen .
- It is usually self limited.

# Genital ulcers:

- Genital herpes (Most common cause)
- Chancre (syphilis)
- Chancroid
- Granuloma inguinale
- Lymphogranuloma venereum

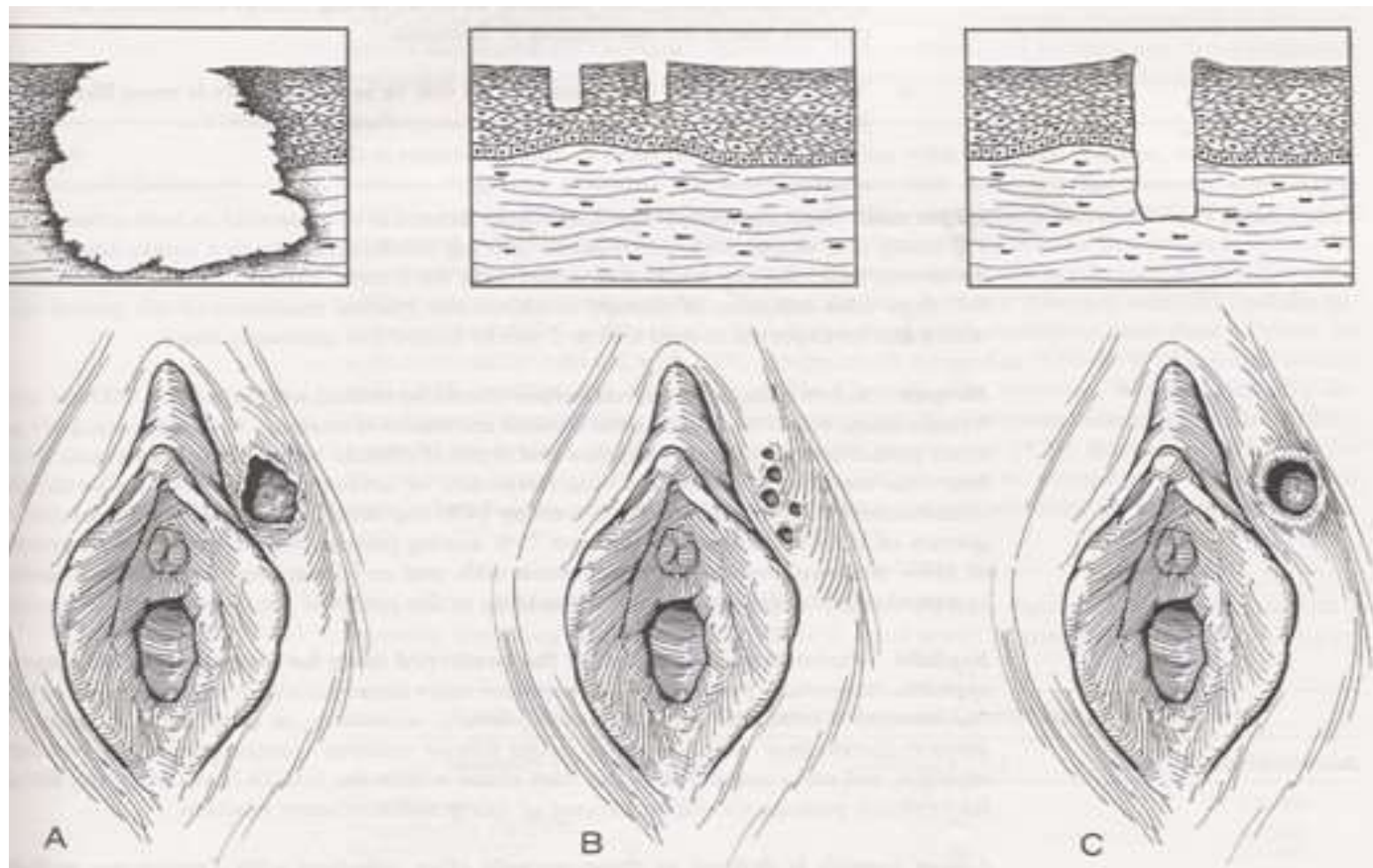


Figure 15.2 Showing the appearance of the ulcers of chancroid (A), herpes (B), and syphilis (C). The ulcer of chancroid has irregular margins and is deep with undermined edges. The syphilis ulcer has a smooth, indurated border and a smooth base. The genital herpes ulcer is superficial and inflamed. (Modified from Schmid GP, Shcalla O, DeWitt WE. Chancroid. In: Morse SA, Moreland AA, Thompson SE, eds. *Atlas of Sexually Transmitted Diseases*. Philadelphia: JB Lippincott, 1990.)



**\*\* Still ¼ of the diagnosis is made by clinical examination only:**

1. Syphilis: Painless, minimally tender ulcer, accompanied by non tender inguinal lymphadenopathy (LAP). Regional adenopathy normally accompanies the chancre of primary syphilis
2. HSV: grouped vesicles mixed with small ulcers with a history of similar lesions (Pathognomonic)
3. Chancroid: 1-3 extremely painful ulcers with tender inguinal LAP
4. LGV: inguinal bubo without ulcers (caused by chlamydia)



# Diagnosis:

- Herpes: -Viral isolation (culture): High specificity, low sensitivity , 50% for primary infxn, 20% for recurrent infxn  
-Direct detection of virus (Tzcan smears, PCR)  
Serology: Newer tests that are specific for type of virus (HerpesSelect 2, herpes glycoprotein for IgG, ELISA)
- Syphilis: Diagnosed by : dark-field microscopy , VDRL or RPR , FTA-ABS & TPPA
- Chancroid: culture for *H.ducreyi*

The bacteria are often seen in short chains or parallel arrays ('school-of-fish' or 'fingerprint' patterns).

# Treatment:

## ➤ Chancroid:

Azithromycin 1gm PO x1, ceftriaxone 250mg IM x1, or Erythromycin 500mg 4 times for 7 days  
ciprofloxacin 500mg 1\*2 for 3 days

## ➤ Herpes: 1 st episode is treated with acyclovir, famciclovir, this will not eradicate the infection, recurrences are common.

For patients with > 6 recurrences/year → daily suppressive treatment is indicated (will not eliminate viral shedding and transmission)

## ➤ Syphilis: Benzathine Penicillin G 2.4 million units IM x1 dose , repeated after 7 days

# Cervicitis

- The cervix is made up of 2 types of cells:
  - \*\*The ectocervical epithelium (squamous) can become inflamed by the same microorganisms that are responsible for vaginitis.
  - \*\* The glandular epithelium that secretes mucus can only be infected by *N.gonorrhea* & *C.trachomatis*

# Diagnosis:

- The diagnosis of cervicitis is based on the finding of a purulent endocervical discharge, generally yellow or green in color (mucopus).



- A purulent or mucopurulent endocervical exudate visible in the endocervical canal or on an endocervical swab specimen
- Sustained endocervical bleeding easily induced by gentle passage of a cotton swab through the cervical os.
- Either or both signs might be present.
- Some patients is asymptomatic, but some women complain of an abnormal vaginal discharge and intermenstrual vaginal bleeding.

## **Chlamydia:**

- Caused by : C. trachomatis
- 75% cases asymptomatic
- Commonly present with abnormal vaginal discharge, burning with urination, spotting, postcoital bleeding.
- Diagnosed by NAAT(nucleic acid amplification testing).
- Treat by: Azithromycin 1gm orally (single dose)  
Doxycycline 100 mg orally twice daily for 7 days

## **Gonorrhea:**

- Caused by: N. gonorrhoeae
- 50% asymptomatic
- Present with vaginal discharge, dysuria, abnormal uterine bleeding
- Diagnosed by culture (Thayer Martin) & NAAT
- Treat by: Cefixime 400mg single dose orally  
Ceftriaxone 250mg IM single dose