

**Parasite of reproductive system**

**(*Trichomonas vaginalis*)**

# Objectives

- \*Identify name of disease, geographical distribution, and habitat.
- \*Describe the morphology and internal organelles of the trophozoite.
- \*Understand the mode of infection.
- \*Describe the life cycle.
- \*List signs & symptoms of the disease in women& men.
- \*List the complications of the disease in women.
- \*Explain the methods of diagnosis.
- \*List the treatment.
- \*List prevention .

Is an anaerobic, flagellated protozoan parasite and the causative agent of trichomoniasis or trich. It is the most common pathogenic protozoan infection of humans in developed countries. The estimates for North America alone are between 5 and 8 millions new infections each year.

- Its habitat in the reproductive and urinary system of people (obligate parasite), that cannot live without close linkage with vaginal, urethral or prostatic tissues.

- Infects squamous epithelium . High incidence of symptomatic infection is seen in women.

- Zinc and other inhibitory substances probably inhibit their growth in men.

- Natural flora (bacteria) keep the pH of the vagina at 4-5 and this discourages infections.

- Once established it causes a shift toward alkalinity (pH 5-6) which encourages its growth.

# Morphology of Trichomonas trophozoite

This organism can survive for up to 24 hours in urine, semen, or even water samples. Multiplication done by longitudinal binary fission.

- Pear shaped.
- Four flagella extend anteriorly used for motility.
- One flagellum extends posteriorly, and its shorter undulating membrane, which extends only one-third the length of the cell.

- **Costa** : a rigid cord attaches the undulating membrane to the cell membrane and gives the undulating membrane support.
- Axostyle**: Sheath of microtubules arises from the bases of flagella, runs down the middle of the body & ends in a pointed tail its function for attachment to the surfaces and may also cause the tissue damage which can be seen in trichomoniasis infections
- Nucleus** is round in the anterior portion



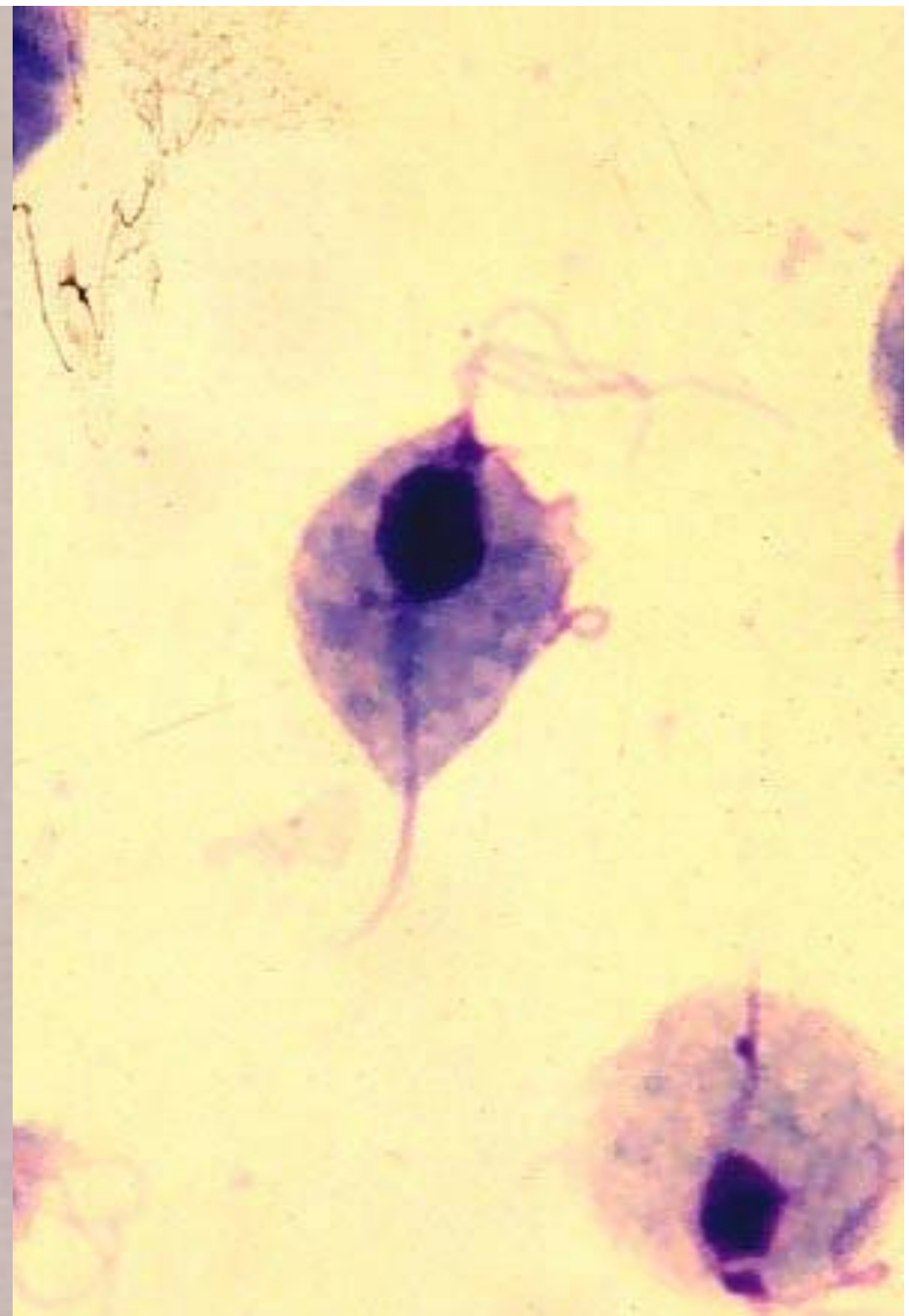


***Trichomonas vaginalis***



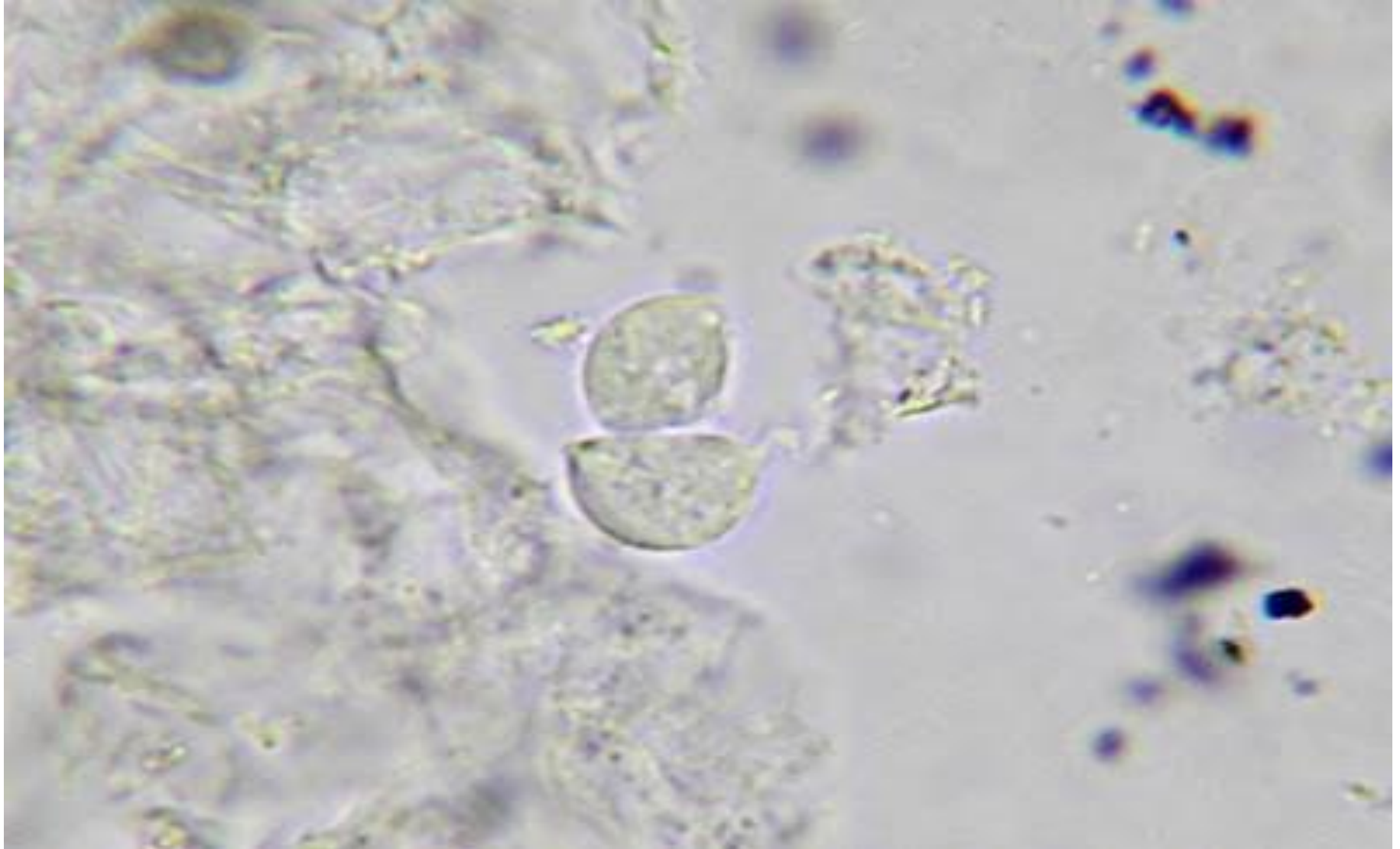
**trophozoite**

(by P.W. Pappas and S.M. Wardrop)



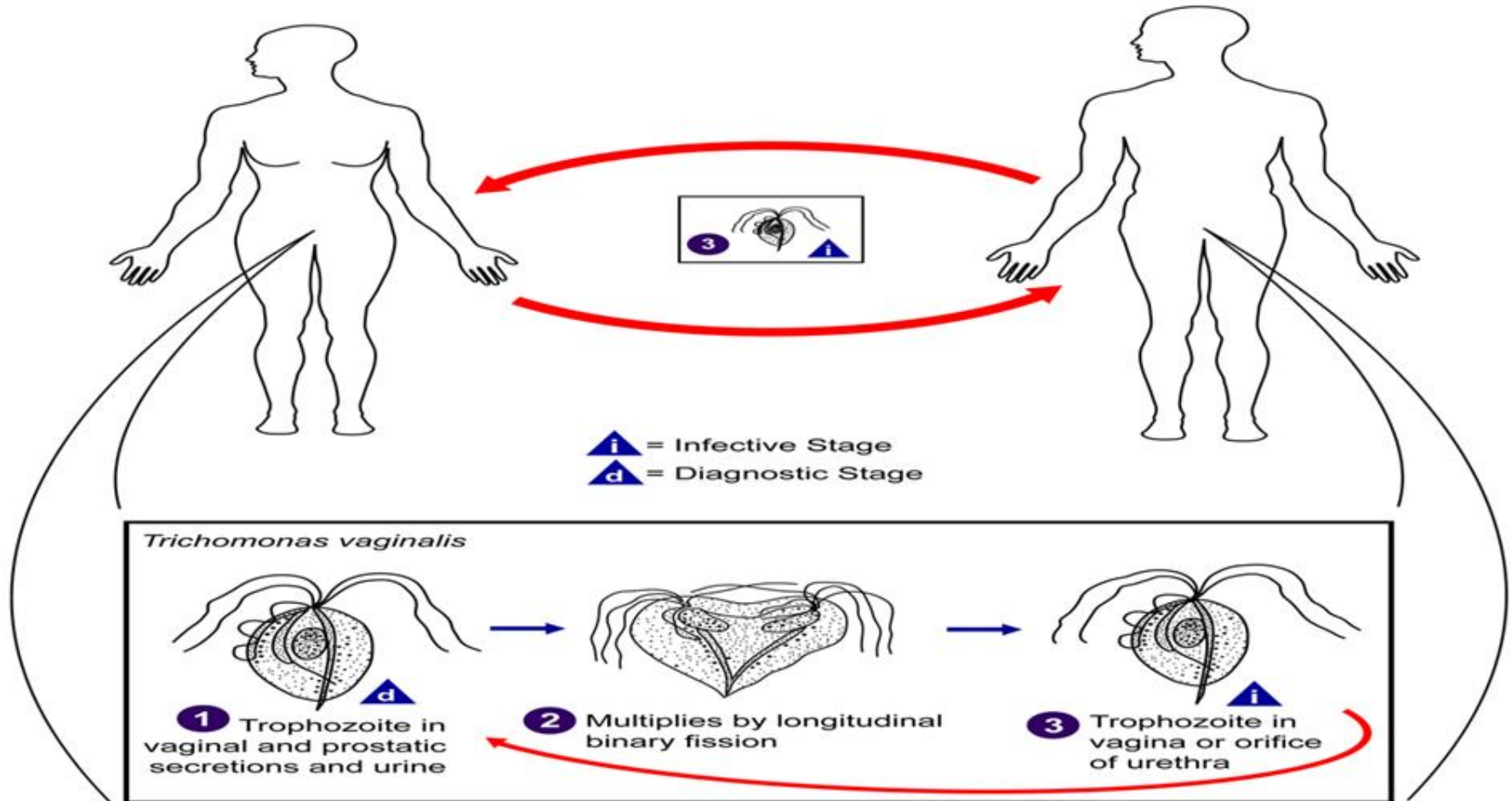


# Trichomonas in wet mount



# Life cycle: Flagella are found in the genital tract

## Trichomoniasis (*Trichomonas vaginalis*)



# Modes of transmission

- 1- Commonly spread through sexual contact with vaginal discharges or urethral discharges of infected persons.
- 2- Transmission of organisms via artificial insemination of infected cryopreservation process of human semen is also possible.
- 3- Non-sexual transmission is rare but has been observed in cases involving wearing contaminated moist underwear, swimming in water pool that contain this parasite .

More than 160 million people worldwide are annually infected by this protozoan ( 20-40% in women) , (15% in men).

## **Incubation period**

It is about 4-28 days , the infection can last for months or years if it is untreated.

## **Signs and symptoms in women**

\*Ranges from asymptomatic, to mild irritation, to extreme vaginitis .

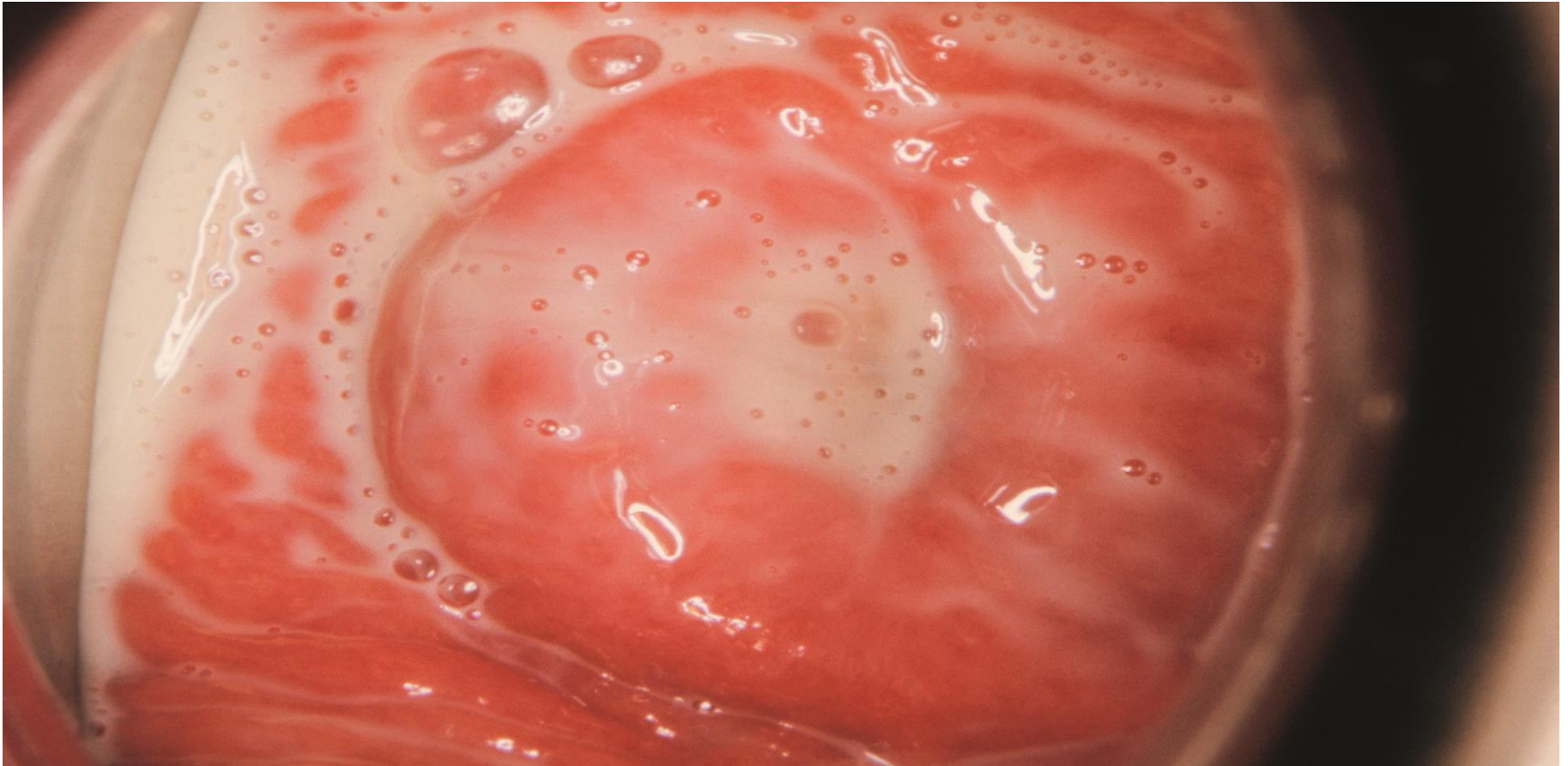
\*Asymtomatic in most cases(10-50%)

# Pathogenicity

**\*Vulvovaginitis :**

**-Purulent vaginal discharge (leucorrhoea).**

Endoscopic image of the patient's vagina showing vaginitis (vaginal inflammation) and leucorrhoea (whitish discharge) caused by trichomoniasis



**-Unpleasant smell**

**-Strawberry cervix**

The appearance of the cervix with *Trichomonas vaginalis* (Strawberry cervix)



Cervicitis symptoms include a red and inflamed cervix with an unusual discharge

Normal cervix



Cervicitis



**\*Punctate hemorrhages in mucosa:**

**-Vaginal epithelium fiery red and inflamed**

**-Dyspareunia (Painful sexual intercourse)**

**\*Urethritis :**

**-Dysuria (painful urination).**

**-Increased frequency of micturition  
(discharge of urine ).**



## Signs and symptoms in men

- Usually asymptomatic (50-90%)

## Pathogenicity

- \* Non-gonococcal urethritis:

- pain during urination or ejaculation

- Testicular pain

- Purulent to mucoid discharge

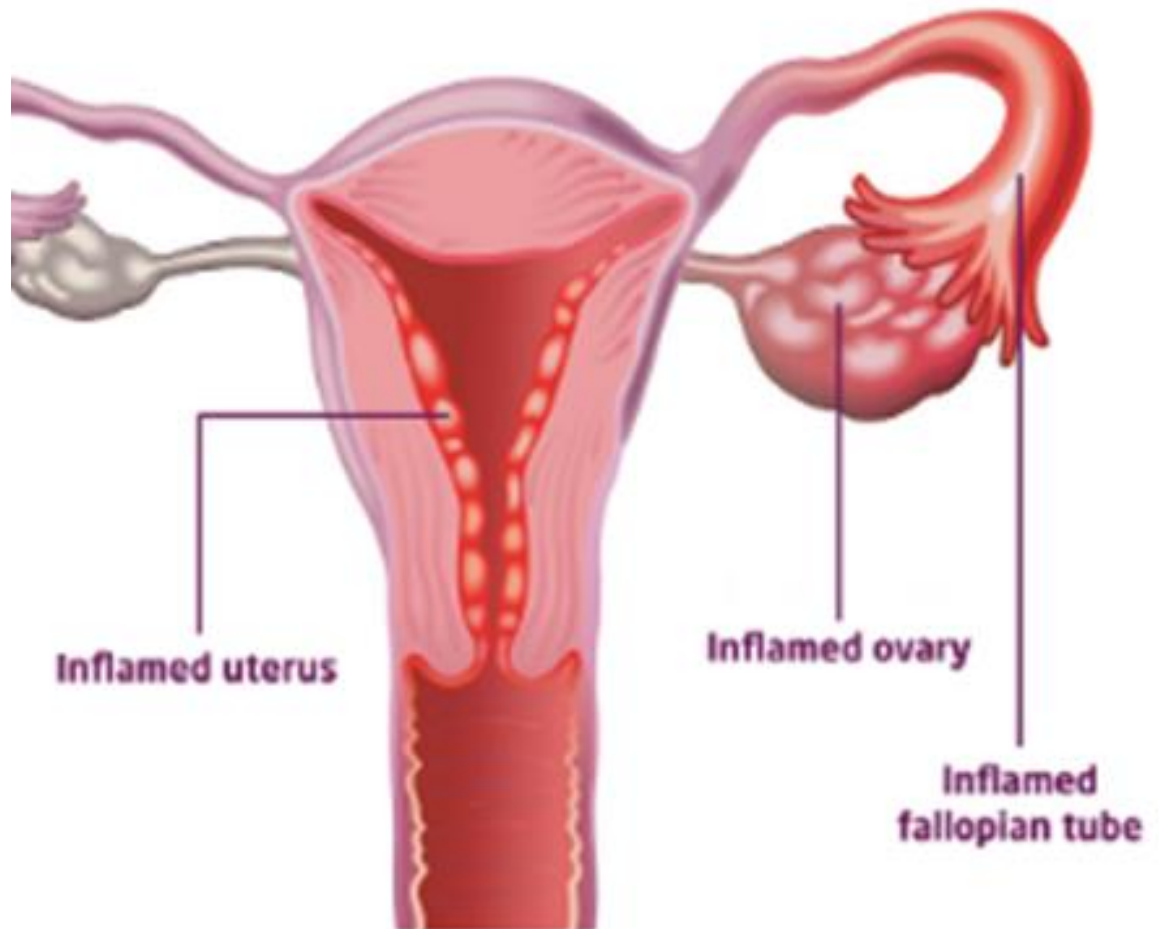
- \* Epididymitis

- \* Prostatitis

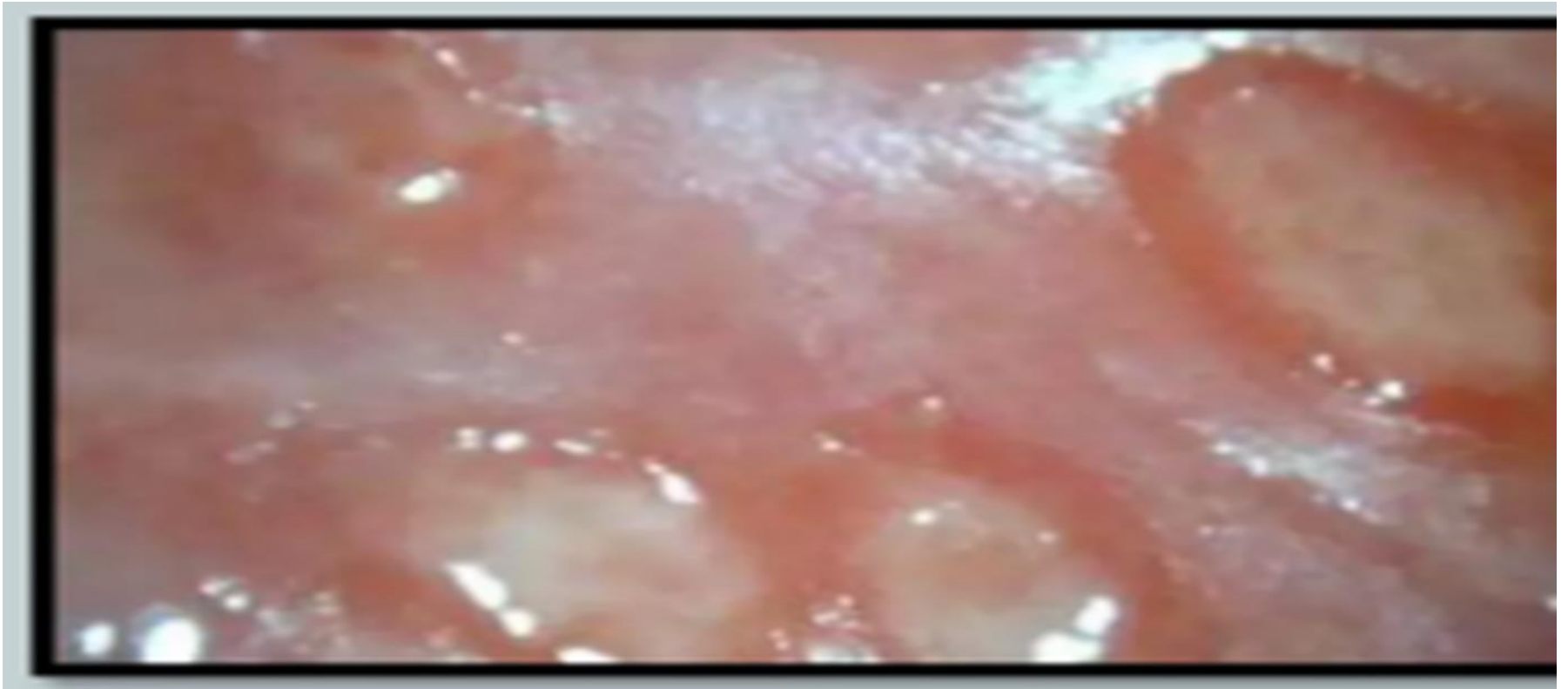
- \* Superficial penile ulcerations

# Complications in women:

- Pelvic inflammatory disease, which can cause infertility.
- Chronic pelvic pain.



- Can cause small sores on the vaginal walls, and inflammation, which can increase the risk of HIV transmission.
- Increase predisposing to cervical cancer.



- Preterm delivery
- Pre labor rupture of membranes
- low birth weight
- Ectopic pregnancy

# Laboratory Diagnosis

## Samples in women:

- Vaginal discharge.
- Endocervical specimen.



## **Samples in men:**

- Urethral discharge
- Semen
- Prostatic fluid (a whitish secretion that is one of the constituents of the semen ).

# Methods of examination

- \* Microscopy
- \* Culture
- \* Antigen detection ( ELISA )
- \* Molecular diagnosis
  - PCR( highly sensitive & specific )

# Microscopy

## 1-Wet mount

- Easy, useful .
- About 80% sensitivity in symptomatic females
- T. vaginalis trophozoites seen jerky movements

## 2-Acridine orange stain

- Rapid & accurate method
- Sensitivity same as wet mount

## 3-Direct fluorescent antibody staining

- Rapid & more sensitive
- Requires a fluorescent microscope



# Laboratory Diagnosis ( Culture)

- Gold standard
- Most sensitive
- Media(Diamond's medium & Kupferberge medium)  
Media contains yeast extract, horse serum & antibiotics.
- Observed for 7 days
- Culture usually positive after 48 hrs
- Used in patients with suspected Trichomoniasis, but wet mount is negative.

# Treatment

1-Infection is treated and cured with metronidazole (2 g) orally in a single dose .If treatment failure occurs , the patient can be treated with metronidazole (500 mg ) orally twice a day for 7 days (highly effective).

2- Tinidazole (2 g ) orally in single dose, which appears to have a higher success rate. Medication should be given to any sexual partner(s) as well, because they may be asymptomatic (carriers ).

3- If this treatment is unsuccessful, then Tinidazole or Metronidazole 2 g orally daily for 5 days is prescribed.

# Prevention

-Detection & treatment of cases  
( both partners).

-Avoidance sexual contact with infected  
person.

- Use of condoms.