

*Tikrit University*

*College of Nursing*

*Basic Nursing Sciences*



**Second Year - 2023-2024**

**Microbiology  
(TRICHOMONAS)**

**by: assistant lecturer**

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# TRICHOMONAS

*Trichomonas* differ from other flagellates as they lack the cyst stage. They exist as only trophozoites. *Trichomonas* belongs to:

**Class:** Trichomonadea

**Order:** Trichomonadida

**Family:** Trichomonadidae

Three species of *Trichomonas* infect humans. They are:

1. *Trichomonas vaginalis* is the only pathogen. It resides in the genital tract.
2. *Pentatrichomonas hominis*: Non-pathogen, resides in large intestine.
3. *Trichomonas tenax*: Nonpathogen, resides in mouth (teeth and gum).

## TRICHOMONAS VAGINALIS

It is the most common parasitic cause of sexually transmitted diseases (STDs).

- ▶ Females are commonly affected than males.
- ▶ It was first observed by Donne in 1836 from the purulent genital discharge of a female.
- ▶ Though it is an eukaryote, its metabolism is similar to a primitive anaerobic bacteria.
- ▶ Carbohydrate is utilized fermentatively. It is unable to synthesize fatty acid, sterols, purines and pyrimidines and hence depends on exogenous sources.

## Morphology

Trophozoites are the only stage, there is no cystic stage.

Trophozoites

It is pear (pyriform) shaped, measures 7–23  $\mu\text{m}$  and 5–15  $\mu\text{m}$  wide (Fig.4.6), resides in vagina and urethra of women and urethra, seminal vesicle and prostate of men.

- ▶ It shows characteristic jerky or twitchy motility in saline mount preparation.
- ▶ It bears five flagella—four anterior flagella and one lateral flagellum called as **recurrent flagellum** as it curves back on the surface of the parasite and traverses as undulating membrane and stops halfway down the side of the trophozoite. It doesn't come out free posteriorly.
- ▶ The undulating membrane is supported on to the surface of the parasite by a rod like structure called as **costa**.
- ▶ The axostyle runs down the middle of the trophozoite and ends in the pointed end of the posterior pole.
- ▶ It has a single nucleus containing central karyosome with evenly distributed nuclear chromatin and the cytoplasm contains a number of siderophore granules along the axostyle.
- ▶ The respiratory organelle is called as **hydrogenosome**.

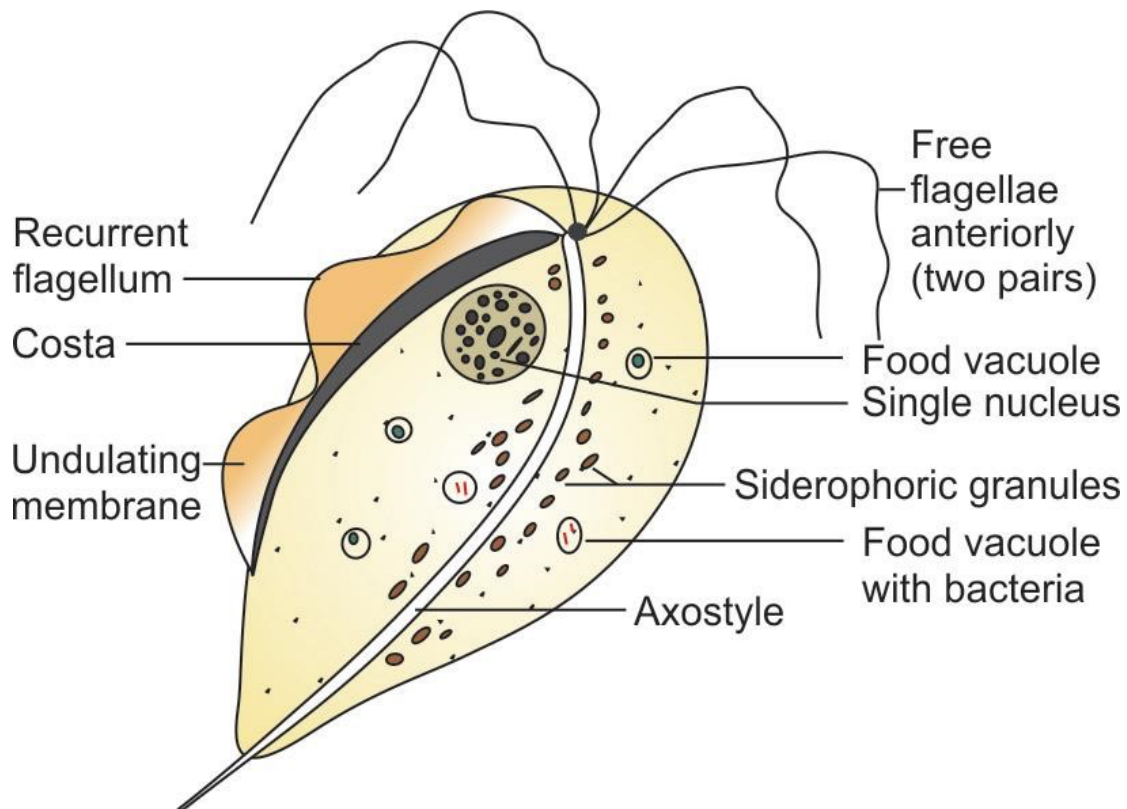


Fig. 4.6: Trophozoite of *Trichomonas vaginalis* (schematic diagram)

## Life Cycle

Trophozoites are the infective stage as well as the diagnostic stage.

- ▶ Asymptomatic females are the reservoir of infection and transmit the disease by sexual route.

- ▶ Trophozoites divide by longitudinal binary fission giving rise to a number of daughter trophozoites in the urogenital tract which can infect other individuals.

## Laboratory diagnosis

### *Direct microscopy*

- ❖ **Samples:** Vaginal, urethral discharge, urine sediment and prostatic secretions can be examined.
- ❖ **Wet (saline) mounting** of fresh samples (within 10–20 minutes of collection) should be done to demonstrate the jerky motile trophozoites and pus cells. Its sensitivity is variable (40–80%).
- ❖ **Permanent stain:** Giemsa stain and Papanicolaou stain are routinely performed to demonstrate the morphology trophozoites (Fig. 4.7).
- ❖ **Acridine orange fluorescent stain** can be used. It is rapid and sensitive; comparable to wet mount.
- ❖ **Direct fluorescent antibody test (DFA):** Trophozoites are detected by staining with fluorescent labeled monoclonal antibodies. DFA test is more sensitive (70–90%) than wet-mount examination.

