

# Enterobius Vermicularis Diagnosed in a Papanicolaou Test During Cervical Cancer Screening

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## ABSTRACT

*Enterobius vermicularis*, commonly known as the human pinworm, represents one of the most prevalent intestinal helminthic infections worldwide. However, involvement of the female genital tract is uncommon and usually results from aberrant migration of gravid worms from the perianal region. Identification of *E. vermicularis* eggs in cervicovaginal smears is rare and is most often detected incidentally during routine cervical cancer screening. We report a case in which characteristic pinworm eggs were identified on a Papanicolaou-stained cervicovaginal smear. Cytological examination demonstrated elongated, planoconvex ova measuring approximately 55–60 µm in length and 25–30 µm in width, surrounded by a thick birefringent shell enclosing embryonic material, along with an inflammatory background suggestive of true genital tract infestation rather than contamination.

Although intestinal enterobiasis commonly presents with mild symptoms such as perianal pruritus or may remain asymptomatic, ectopic migration into the female genital tract may lead to vaginitis, salpingitis, pelvic inflammatory disease, and, rarely, more severe complications. As many cases remain clinically silent, cytological evaluation plays an important role in incidental detection.

This case underscores the diagnostic value of routine cervicovaginal cytology in identifying unexpected parasitic infestations and highlights the importance of accurate recognition and reporting to facilitate appropriate clinical management and prevent potential ascending infection and related complications.

**Keywords:** *Enterobius vermicularis*; Pinworm; Cervicovaginal smear; Papanicolaou smear; Genital tract

## INTRODUCTION

*Enterobius vermicularis* (EV), commonly referred to as the human pinworm, is a nematode parasite and one of the most common helminthic infections affecting humans worldwide, with humans serving as the only natural host. Transmission

primarily occurs through the fecal–oral route via direct hand-to-mouth contact, contaminated fomites such as clothing or bedding, or inhalation of airborne infective eggs. Autoinfection and person-to-person transmission are frequently observed.<sup>1</sup>

Following ingestion, embryonated eggs of *Enterobius vermicularis* hatch in the small intestine and mature into adult worms in the caecum and colon. Gravid females migrate nocturnally to the perianal region to deposit eggs, producing perianal pruritus. Although intestinal infection is often asymptomatic, genital tract involvement is rare and occurs due to aberrant migration of worms from the perianal region to the vulva and vagina, with possible ascending spread to the cervix, uterus, and fallopian tubes. This may result in vulvovaginitis, endometritis, salpingitis, or rarely more severe complications. Many cases remain asymptomatic and are detected incidentally during cytological examination.<sup>2</sup>

The Papanicolaou (Pap) test can therefore aid in the incidental detection of such parasitic infections during routine cervical screening. In view of its rarity, we report a case of *Enterobius vermicularis* identified in routine cervicovaginal cytology.

### CASE PRESENTATION

A 48-year-old female presented with complaints of vaginal discharge and vulval

pruritus of two years duration. Per speculum examination revealed excessive vaginal discharge, while the cervix appeared healthy. Cervical and vaginal scrapings were obtained, and smears were prepared using the Papanicolaou staining technique.

Microscopic examination showed predominantly superficial squamous epithelial cells along with occasional intermediate and parabasal cells in a background rich in acute inflammatory cells. Among these, several embryonated eggs of *Enterobius vermicularis* were identified. Some eggs demonstrated a coiled larva within. (Figs 1 and 2)

The ova were elongated and characteristically flattened on one side, measuring approximately 50–60  $\mu\text{m}$  in length and 20–30  $\mu\text{m}$  in width. They exhibited a double-contoured birefringent shell staining orange on Pap stain. The enclosed larvae displayed dark granular structures imparting a characteristic “leopard-skin” appearance. The patient received antihelminthic therapy and became symptom-free following treatment.



**Figure 1:** The pap smear shows many superficial squamous epithelial cells and scattered eggs of *Enterobius vermicularis*. (Papanicolaou Stain, x400)



**Figure 2:** Elongate-oval pinworm egg typically flattened on one side and double-layered (Papanicolaou Stain, x400).

## DISCUSSION

The most frequently detected parasite in cervicovaginal cytology is *Trichomonas vaginalis*. In rare instances, other parasites or their ova may also be identified, including *Enterobius vermicularis*.<sup>3</sup>

*E. vermicularis*, commonly known as the human pinworm, is a nematode for which humans are the only known host. The adult female measures approximately 8–13 mm in length, while the male is smaller, measuring about 2–5 mm. Adult worms usually inhabit the caecum. At night, gravid females migrate to the perianal region to deposit eggs on the surrounding skin, producing autoinfection when contaminated fingers transfer infective eggs to the mouth. Transmission may also occur via contaminated clothing or bedding. After ingestion, eggs hatch in the small intestine and larvae mature in the colon. Rarely, worms migrate to the female genital tract and deposit eggs.<sup>3</sup>

While enterobiasis is generally considered a benign intestinal infection causing mild symptoms such as perianal itching, extraintestinal migration may result in significant gynecological and systemic complications. Aberrant migration toward the vulva and vagina may allow entry into the female genital tract. Ascending spread involving the uterus, fallopian tubes, ovaries, and peritoneal cavity has been reported. Documented manifestations include vulvar pruritus, vaginitis, urinary tract infection,

salpingitis, tubo-ovarian abscess, pelvic inflammatory disease, postmenopausal bleeding, and generalized peritonitis.<sup>1</sup>

Only a limited number of cases of vaginal or cervicovaginal enterobiasis have been reported worldwide, particularly in adult women. Cytological examination may therefore represent the only diagnostic modality, especially in asymptomatic individuals undergoing routine screening. A prominent inflammatory background supports true infestation, whereas eggs seen in a clean smear may suggest contamination from the perianal region.<sup>4</sup>

*Enterobius vermicularis* eggs are recognized by their characteristic elongated, planoconvex shape (55–60  $\mu\text{m}$   $\times$  25–30  $\mu\text{m}$ ). On Papanicolaou staining, they appear orange-red with a thick birefringent shell containing granular embryonic material or developing larvae.<sup>4</sup>

During differential diagnosis, vaginal samples may be contaminated by perianal eggs or mistaken for pollen grains, vegetable matter, fungal spores, or other parasitic ova. True infestation is suggested by the presence of an acute inflammatory background. Other parasitic infections to be considered include *Entamoeba histolytica*, *Microfilaria*, *Strongyloides stercoralis*, *Schistosoma haematobium*, *Trichuris trichiura*, *Ascaris*, and *Taenia*. Clinical correlation and supportive investigations such as stool examination aid confirmation.<sup>2</sup>

This case highlights the importance of meticulous cytological evaluation, as detection of pinworm eggs may represent either incidental contamination or true genital infestation requiring appropriate treatment to prevent ascending infection and related complications.

### CONCLUSION

This case emphasizes the significant role of cervicovaginal cytology in the incidental detection of parasitic infestations during routine cervical cancer screening. Although identification of *Enterobius vermicularis* eggs in Pap smear is uncommon and may occasionally represent contamination, accurate recognition and reporting are essential, particularly in symptomatic patients. Early identification facilitates appropriate clinical management and may help prevent ascending infection and associated complications.

### Declaration by Authors

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### REFERENCES

1. Shetty JB, Kulkarni DV, Prabhu V. Eggs containing larvae of *Enterobius vermicularis* in vaginal smear. *J Cytol.* 2012 Jan;29(1):94-6. doi: 10.4103/0970-9371.93238.
2. Tsai CY, Junod R, Jacot-Guillarmod M, Beniere C, Ziadi S, Bongiovanni M. Vaginal *Enterobius vermicularis* diagnosed on liquid-based cytology during Papanicolaou test cervical cancer screening: A report of two cases and a review of the literature. *Diagn Cytopathol.* 2018 Feb;46(2):179-186. doi: 10.1002/dc.23812.
3. Zafar N. *Enterobius* (Pinworm) ova in a liquid-based gynecologic cytology specimen. *Diagn Cytopathol.* 2009 Apr;37(4):270-1. doi: 10.1002/dc.20928.
4. Choi SK, Kim EK, Hong YO, Lee HJ, Lee WM, Ko SK, Joo JE. *Enterobius vermicularis* ova in a vaginal smear. *Korean J Pathol* 2010 Jun 1;44(3):341-2. DOI: 10.4132/KoreanJPathol.2010.44.3.341

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