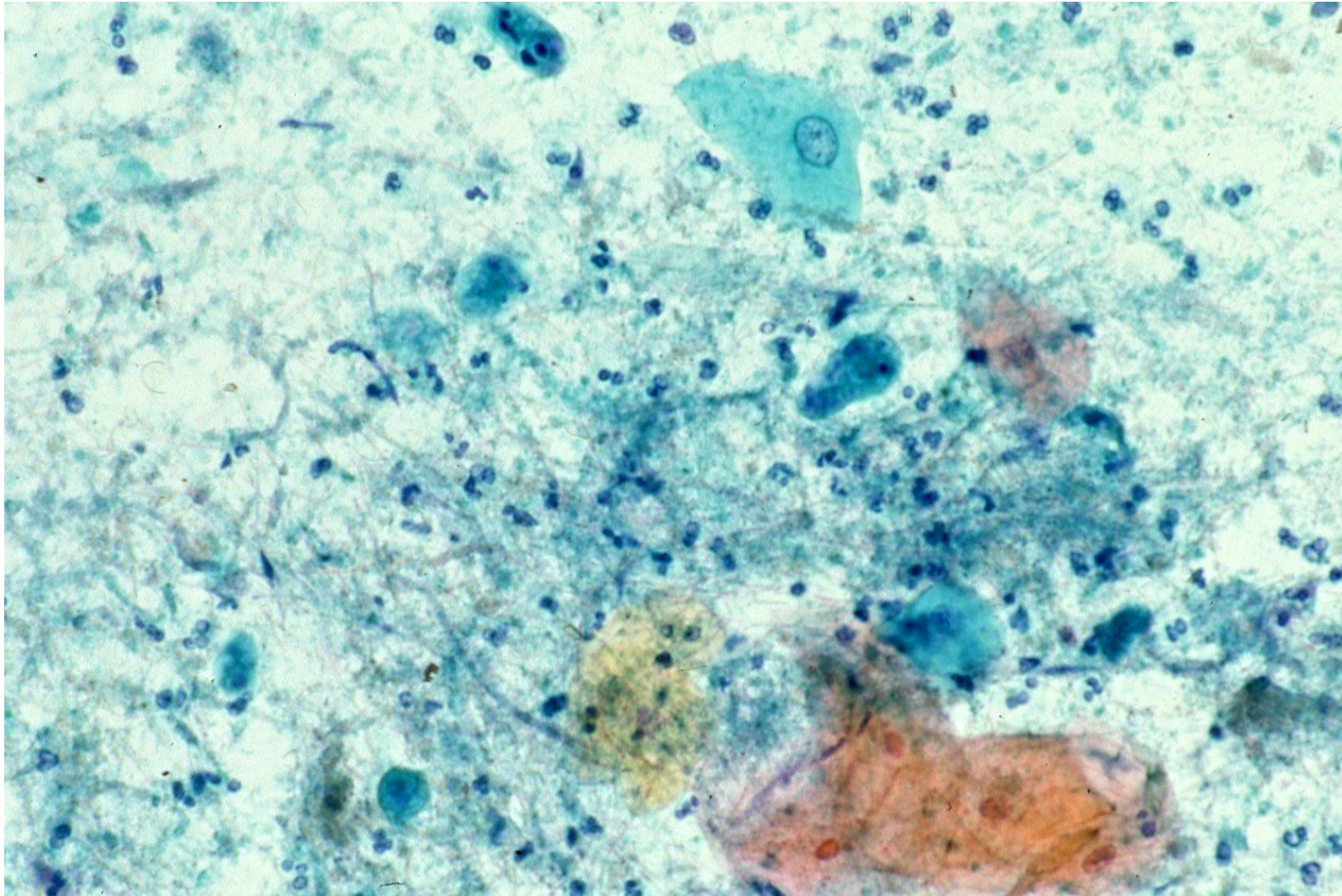


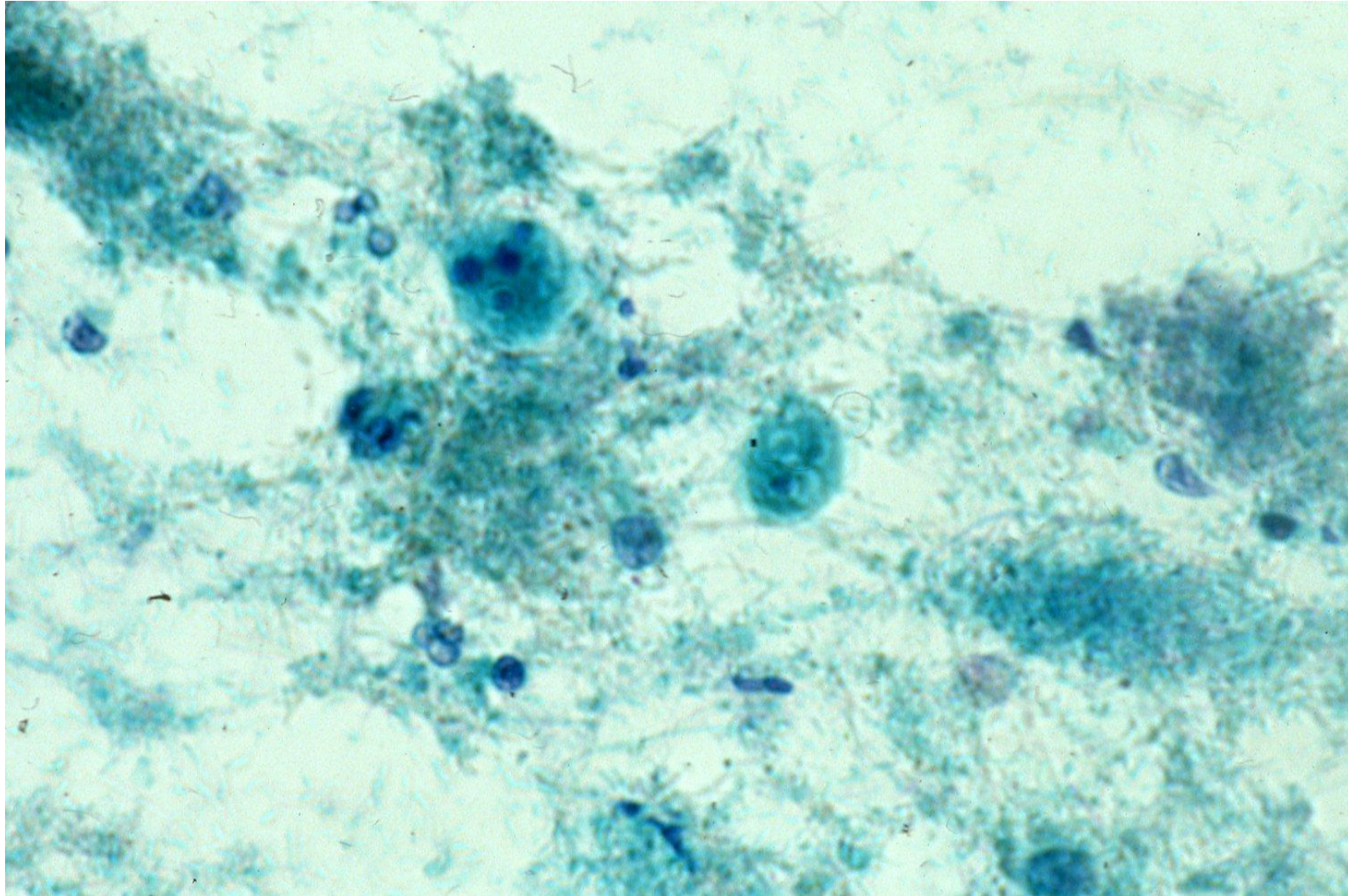
Entamoeba gingivalis infection around intrauterine device

Entamoeba gingivalis, an obligatory anaerobic protozoon, is common in individuals with poor oral hygiene or periodontal disease, but it is non-pathogenic and unrelated to the cause of the oral disorders. There is no known cyst stage, and trophozoites live in the gingival pockets. Trophozoites are transmitted person-to-person orally by kissing, oral sex or fomites. The trophozoites of *E. gingivalis* are morphologically similar to that of *E. histolytica*. Actinomyces bacteria simply provide a favorable (anaerobic) environment for the amoeba to survive.

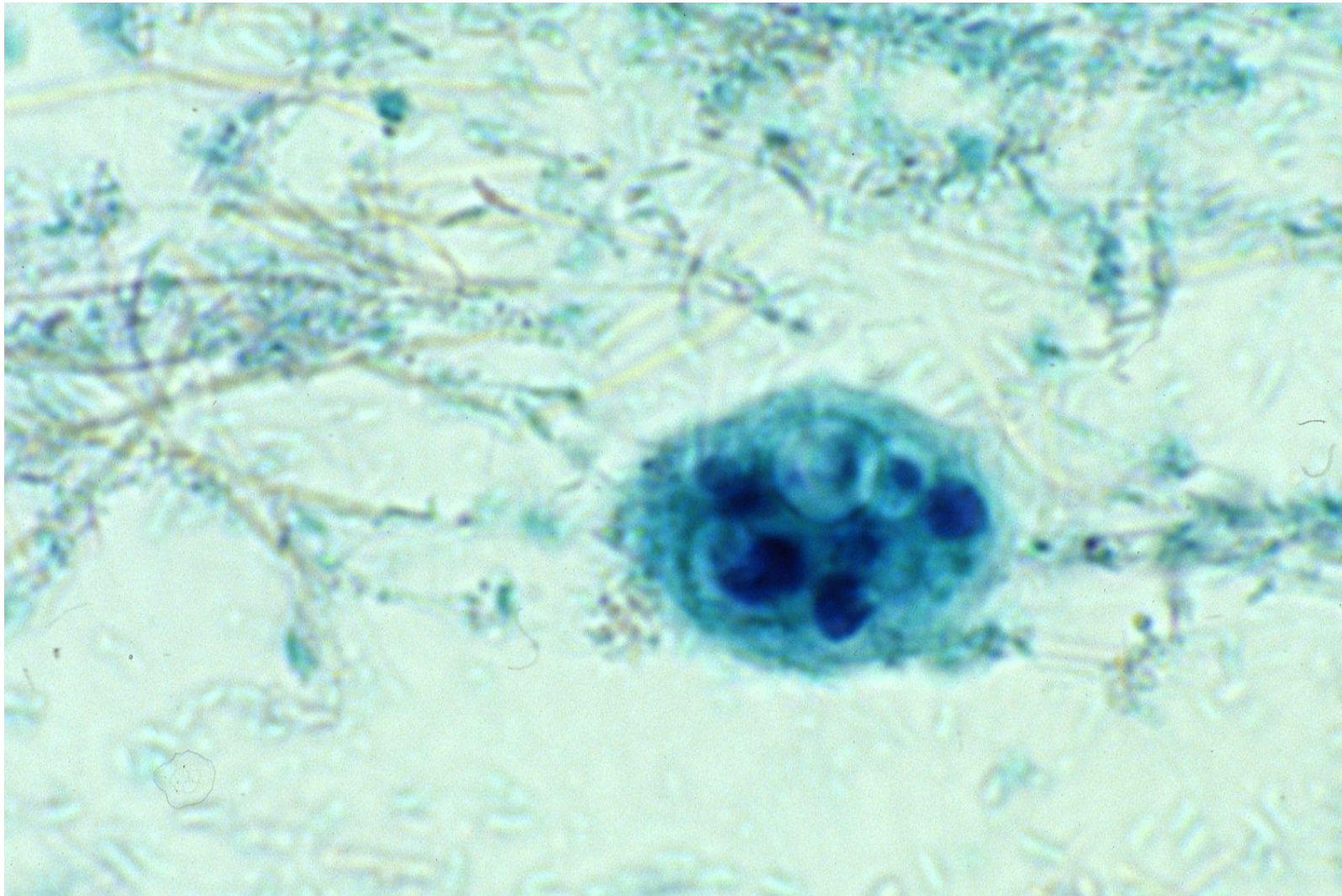
Occasionally, *E. gingivalis* trophozoites are identified from the female genital tract (endometrium), particularly in association with the use of an intrauterine device. Co-infection with *Actinomyces israelii* is common: *A. israelii*, providing anaerobic environment for the survival of the amoeba, provokes the symptom of discharge.



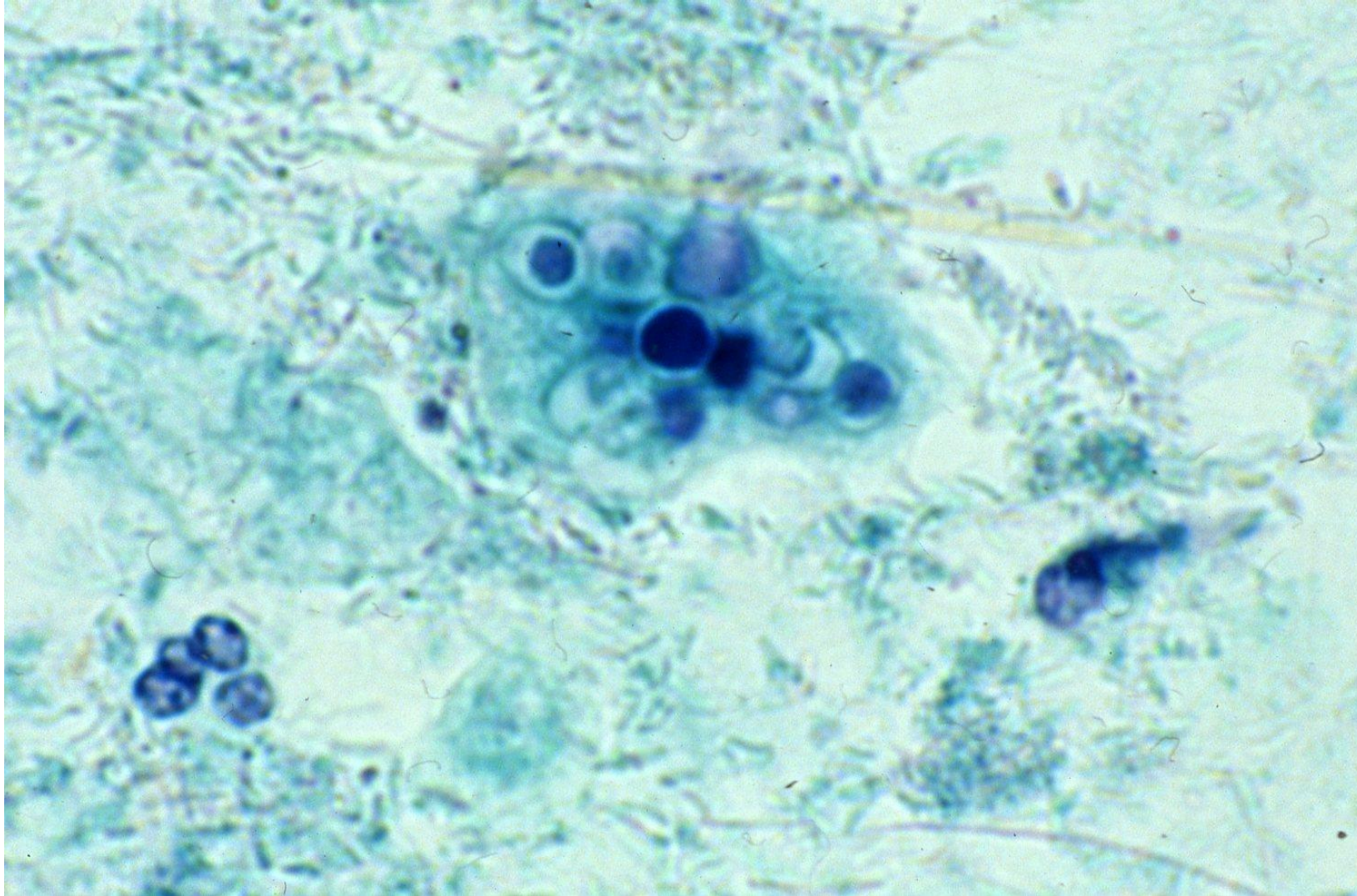
Smear from the gingival pocket with advanced periodontitis (Papanicolaou-1). In the background of inflammation and bacterial/fungal colonization, trophozoites of *Entamoeba gingivalis* are scattered.



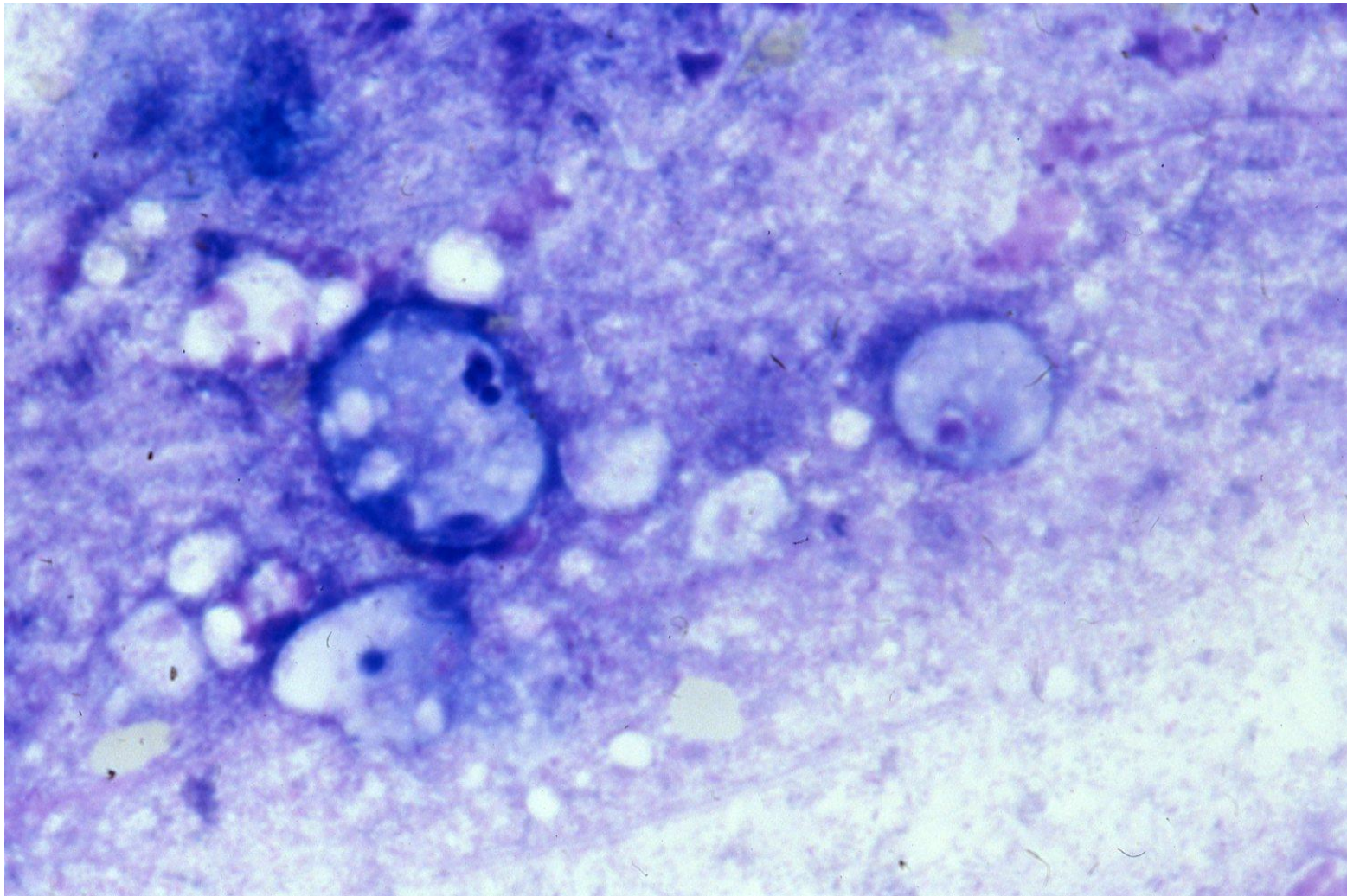
Smear from the gingival pocket with advanced periodontitis (Papanicolaou-2). In the background of bacterial/fungal colonization, trophozoites of *Entamoeba gingivalis* are scattered. The amoebae phagocytize granulocytes.



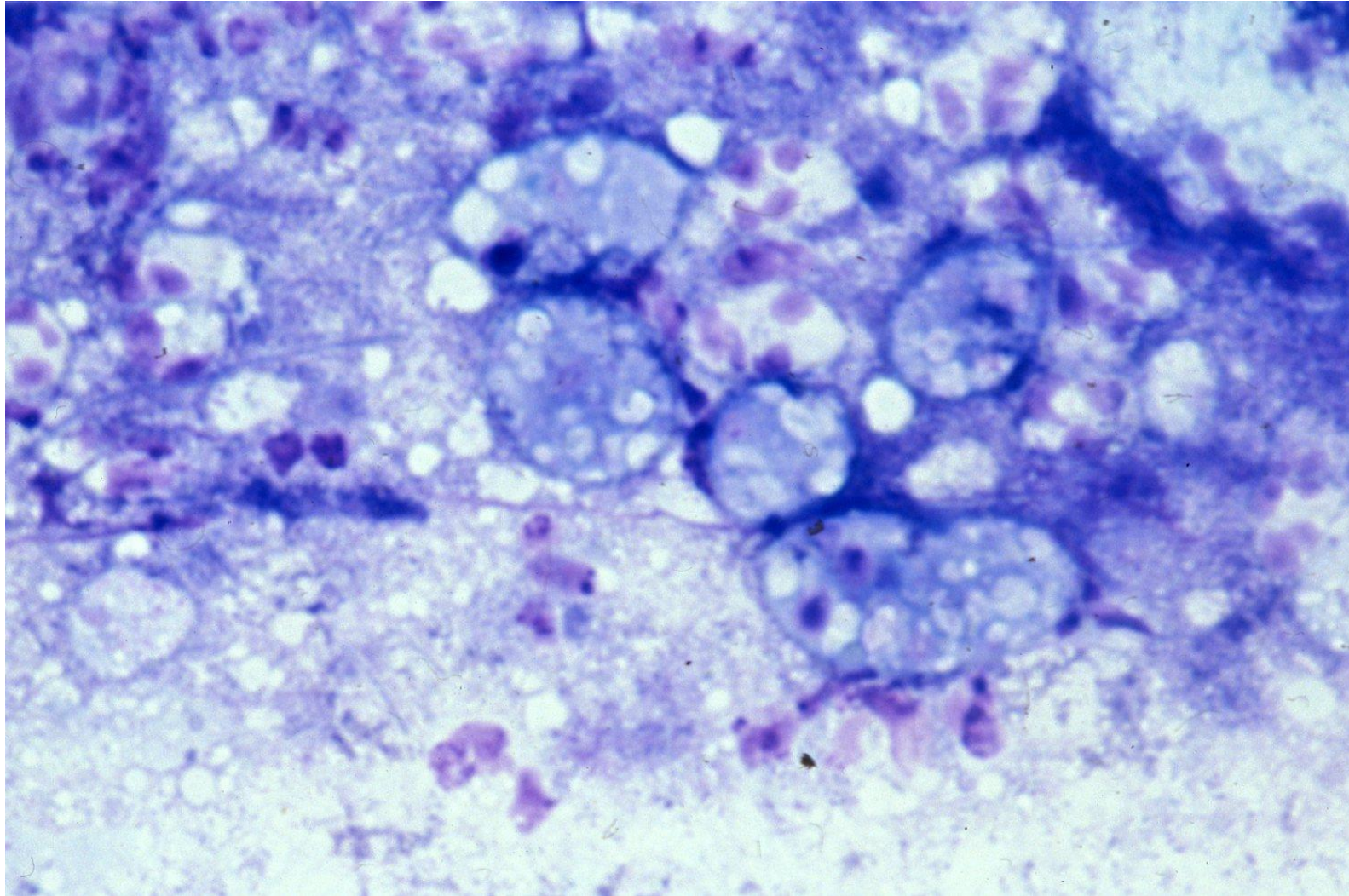
Smear from the gingival pocket with advanced periodontitis (Papanicolaou-3). In the background of bacterial/fungal colonization, trophozoites of *Entamoeba gingivalis* are observed. The amoeba phagocytizes granulocytes.



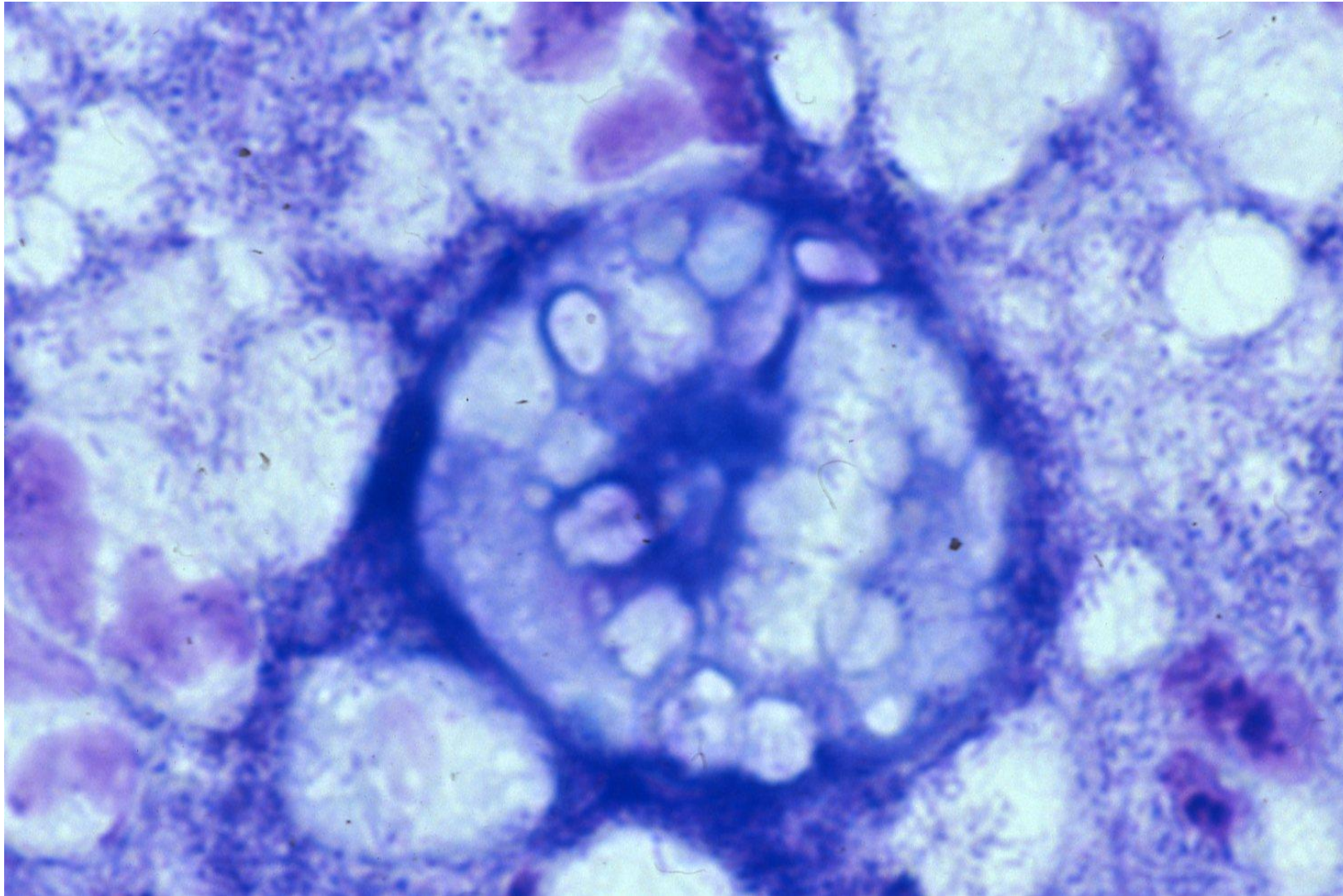
Smear from the gingival pocket with advanced periodontitis (Papanicolaou-4). In the background of bacterial/fungal colonization, trophozoites of *Entamoeba gingivalis* are observed. The amoeba phagocytizes granulocytes.



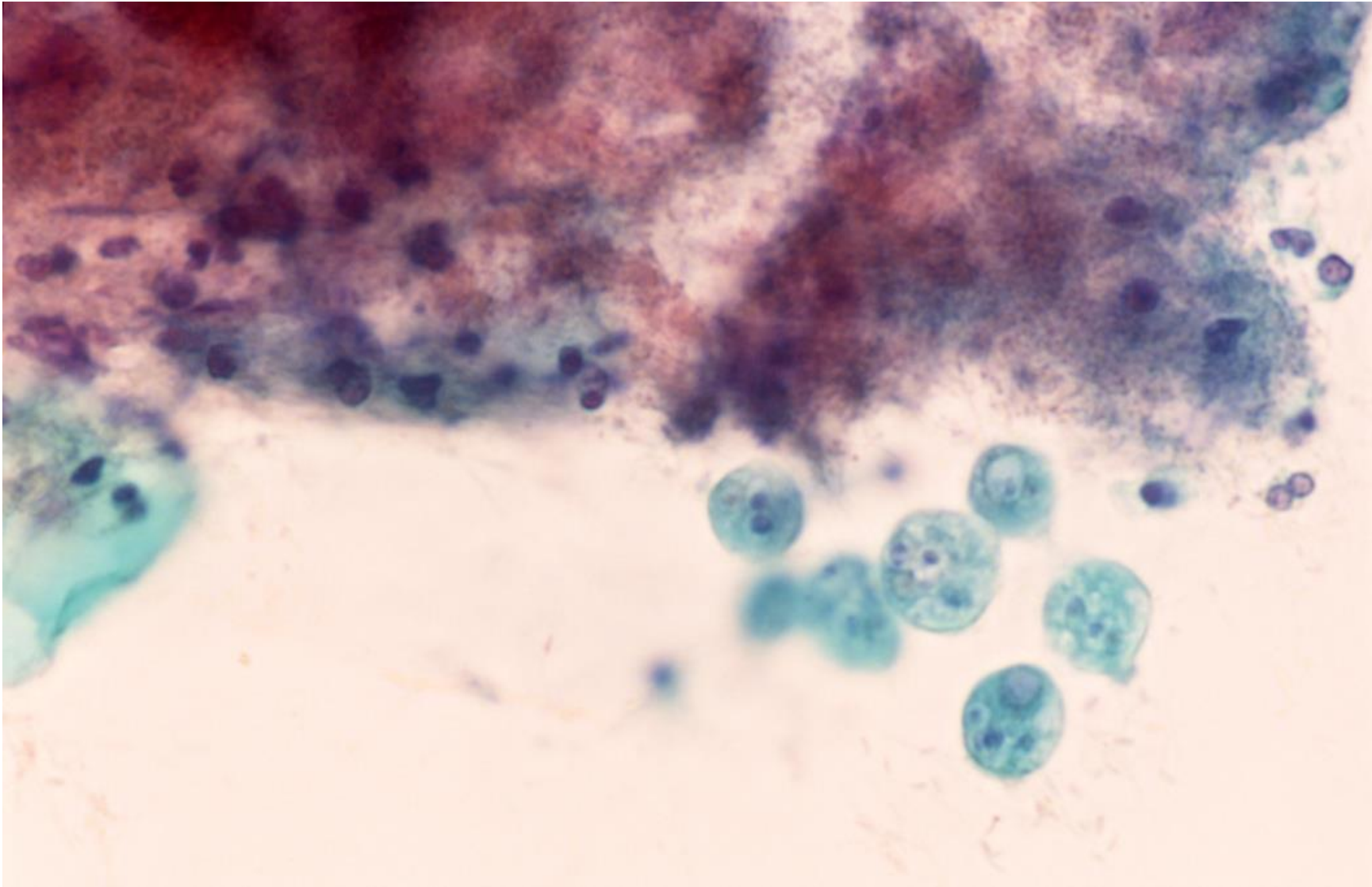
Smear from the gingival pocket with advanced periodontitis (Giemsa-1). In the background of bacterial/fungal colonization, trophozoites of *Entamoeba gingivalis* are observed. The vacuolated amoebae phagocytize granulocytes.



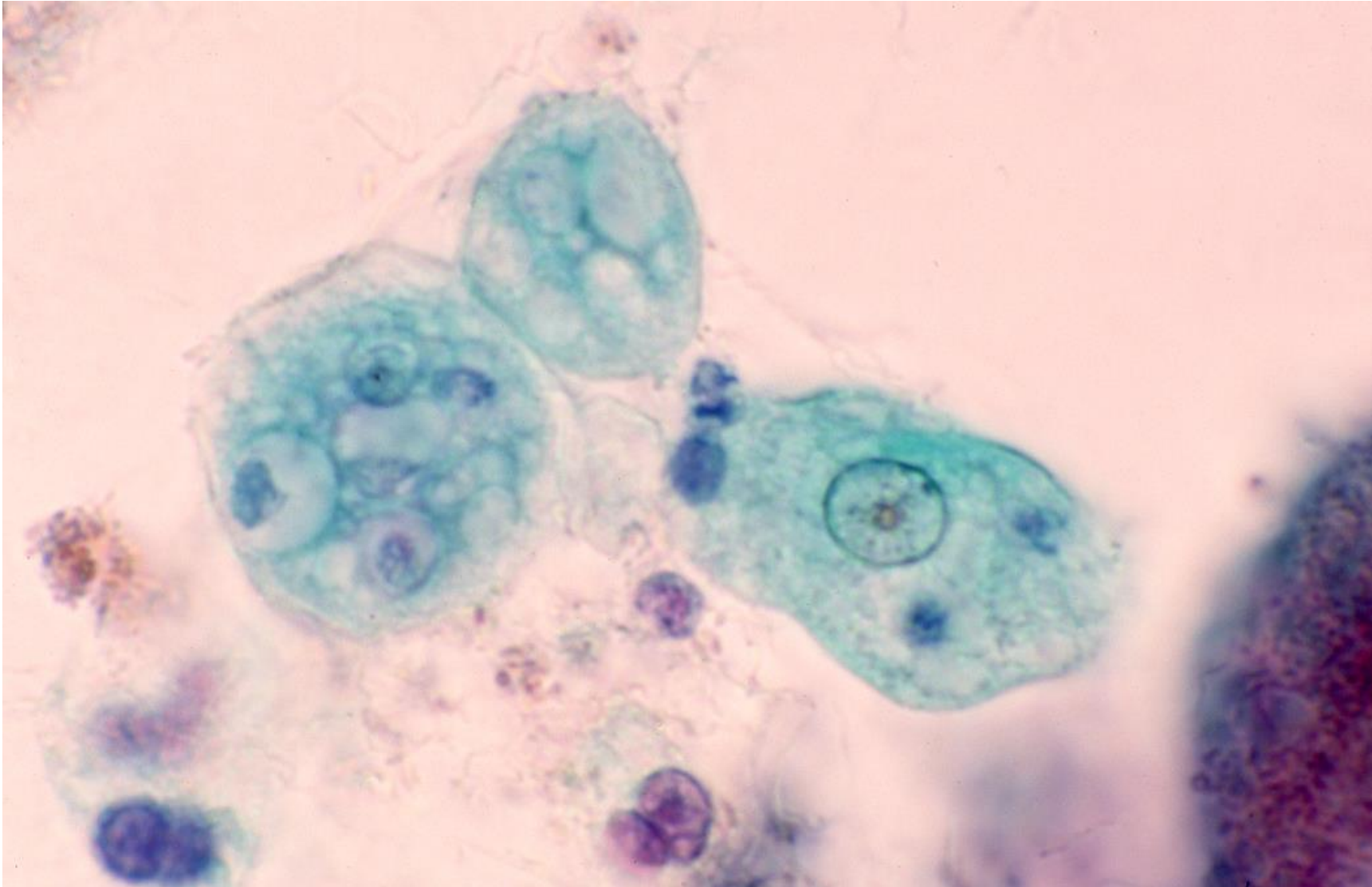
Smear from the gingival pocket with advanced periodontitis (Giemsa-2). In the background of bacterial/fungal colonization, trophozoites of *Entamoeba gingivalis* are clustered. The vacuolated amoebae phagocytize granulocytes.



Smear from the gingival pocket with advanced periodontitis (Giemsa-3). In the background of bacterial/fungal colonization, trophozoites of *Entamoeba gingivalis* are observed. The cytoplasm of the amoeba is vacuolated.



Sputum cytology with incidental inclusion of *Entamoeba gingivalis* (Papanicolaou-a). Trophozoites of *E. gingivalis* are clustered. The amoebae phagocytize granulocytes. This should be regarded as a contamination from the indigenous oral microbiota.



Sputum cytology with incidental inclusion of *Entamoeba gingivalis* (Papanicolaou-b). Trophozoites of *E. gingivalis* are clustered. The vacuolated amoebae phagocytize granulocytes. This should be regarded as a contamination from the indigenous oral microbiota.

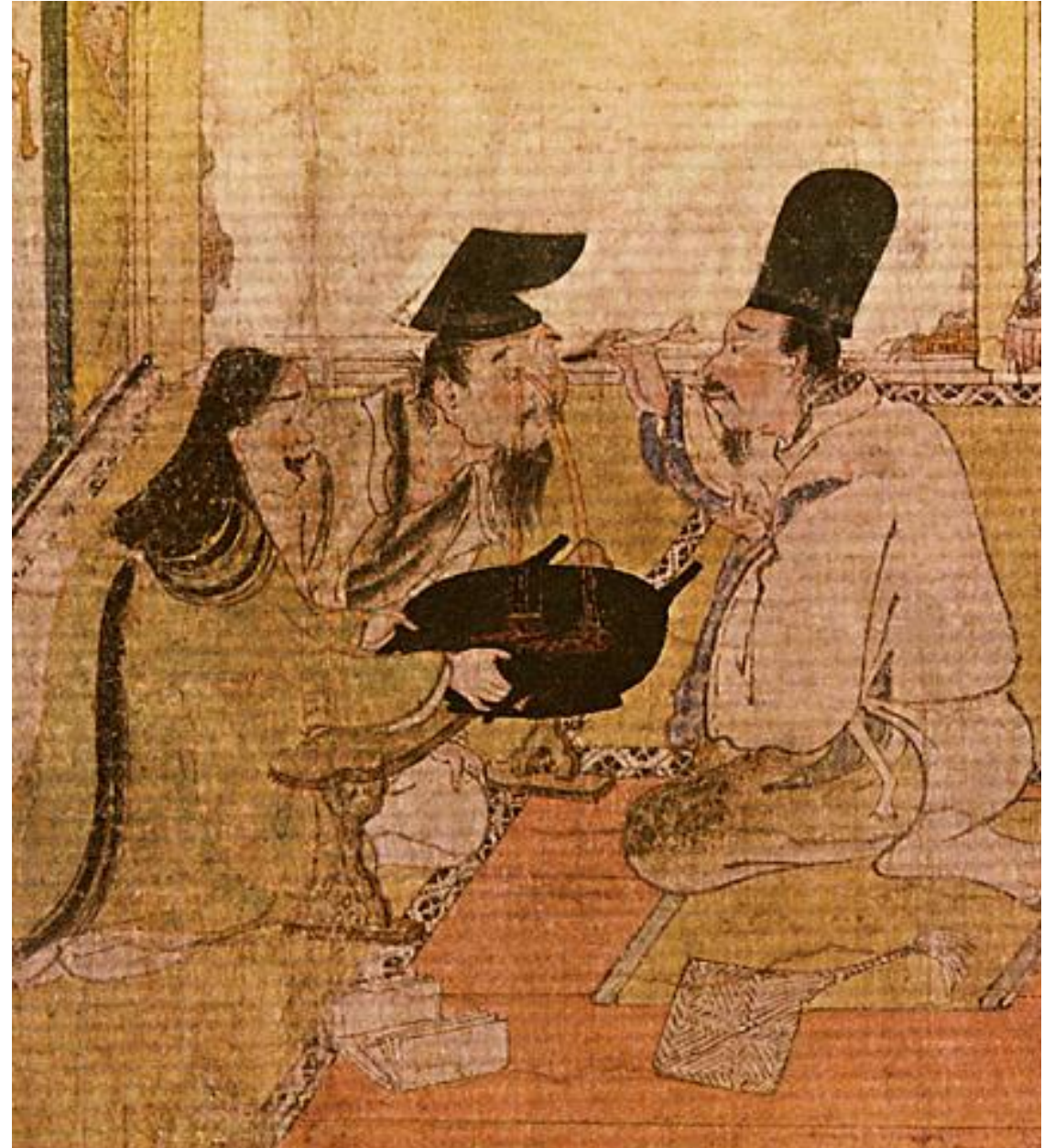
Key technique

Use of a single glass slide for plural kinds of staining

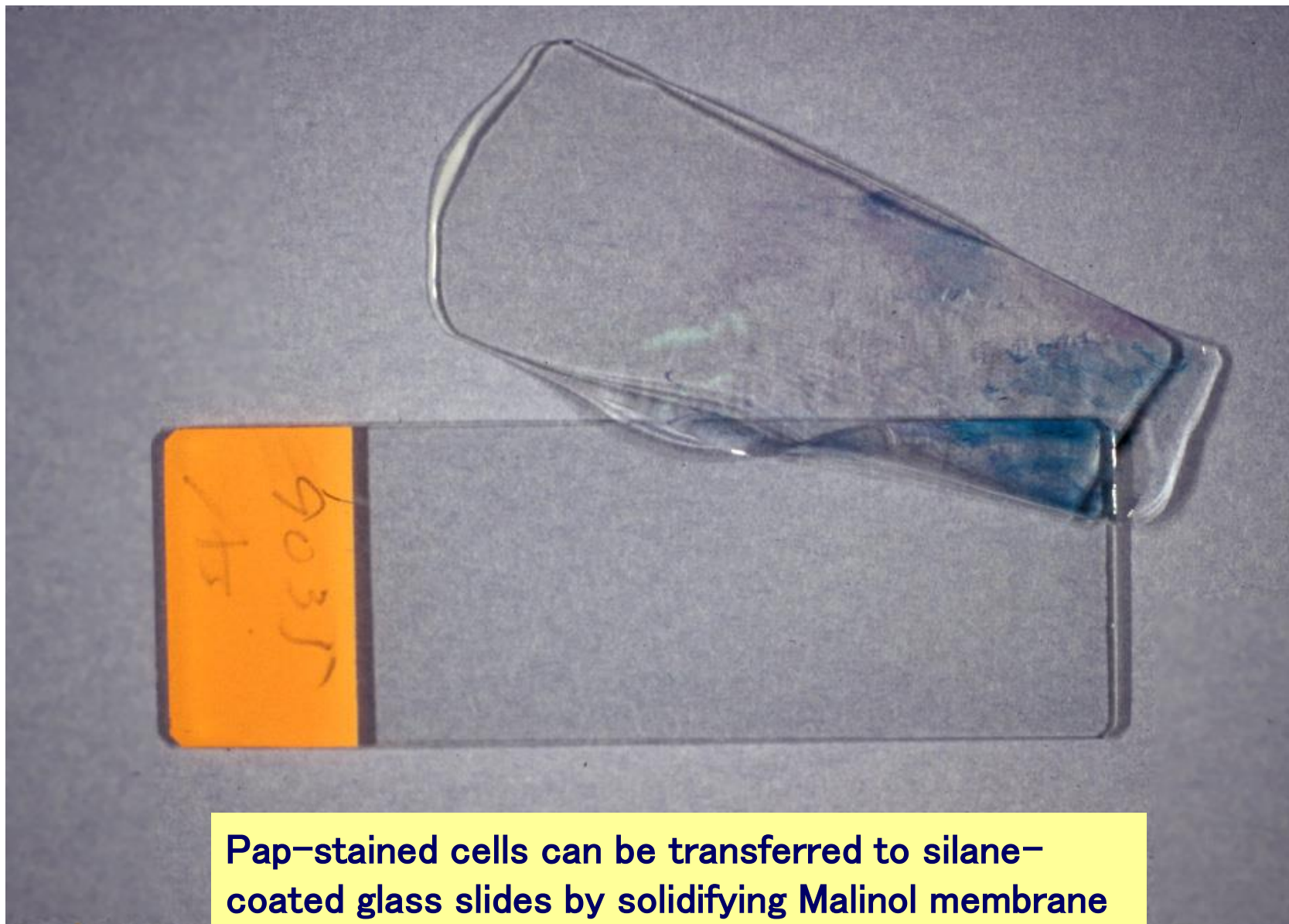
Yamai-no-Soshi :

*The world-oldest Atlas
(Handscroll) of Diseases and
Deformities published more
than 800 years ago*

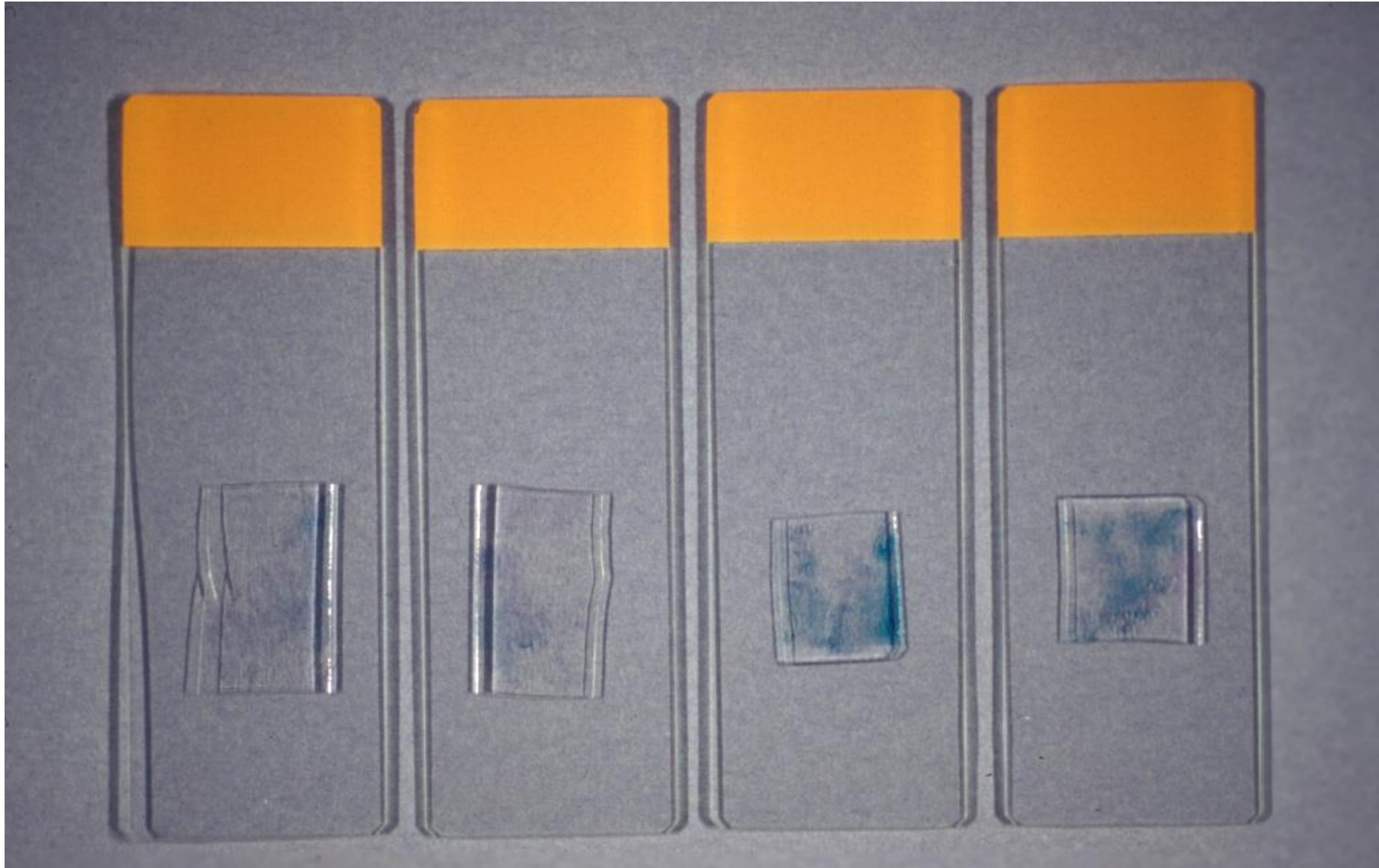
Treatment for Eye Disease



How to use a single cytology specimen for immunocytochemistry: "cell transfer" technique

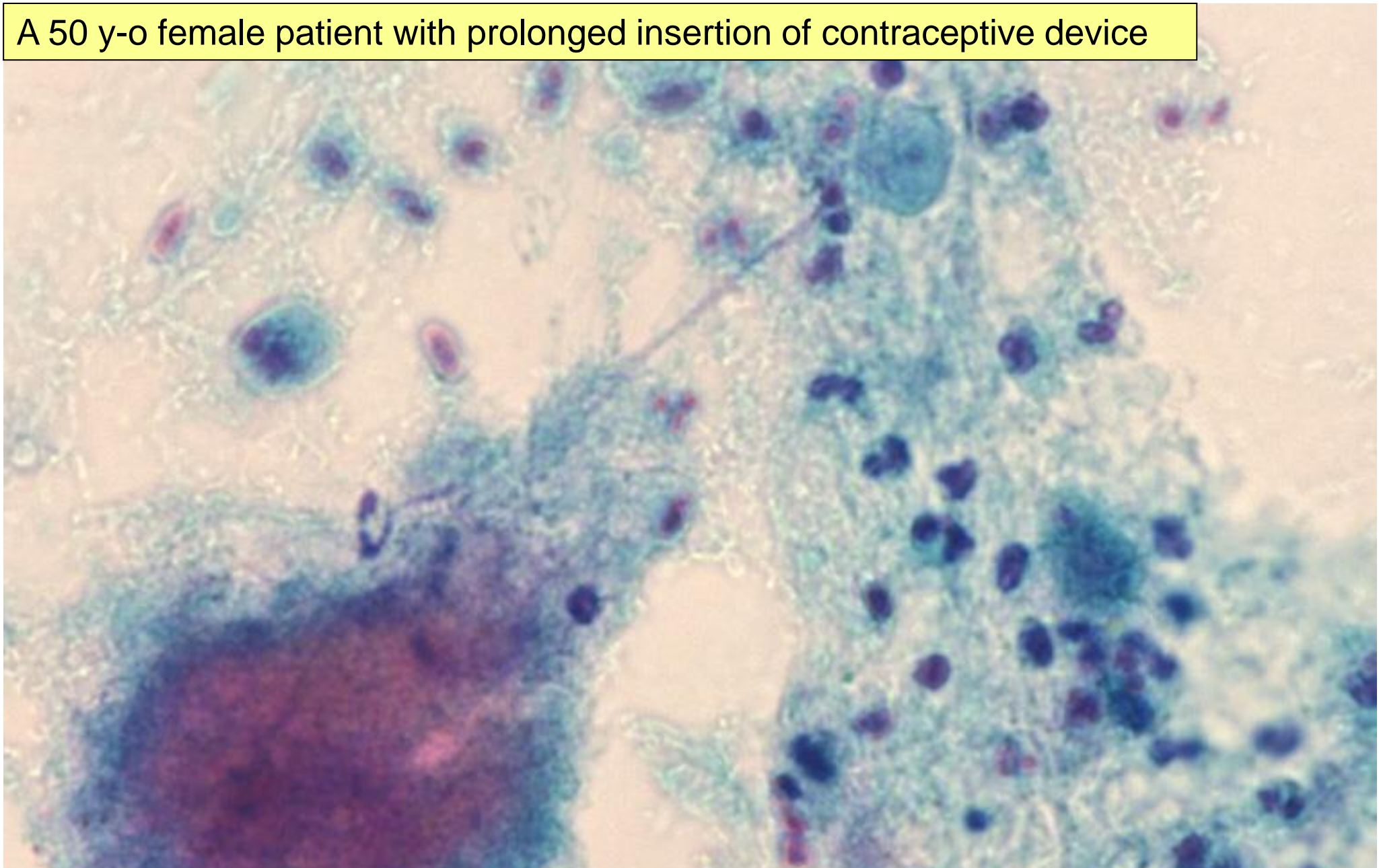


Cell transfer, followed by cutting into pieces



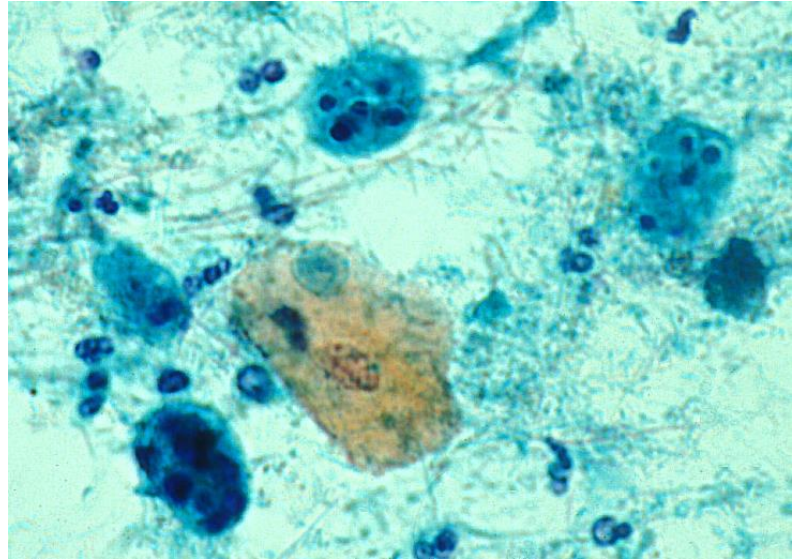
Several slides are ready for histochemistry by cutting the solidified Malinol membrane

A 50 y-o female patient with prolonged insertion of contraceptive device



Cytology specimen of exudates around the intrauterine device (Pap) : **Actinomycosis + amebiasis**

PCR for *Entamoeba* species



Oral flora:
cytology (Pap)

Primers sense 5'– tcagataccgtcgtagtct – 3'
 antisense 5'– cctggtgtgcccttcct – 3'

PCR conditions:
94°C 15 sec, 55°C 30 sec, 72°C 30 sec : 35 cycles

221bp fragment : High homology with *E. gingivalis* genome

In this case, a piece of cell-transferred preparation was used for the extraction of DNA for PCR analysis

