# EXPERIENCE OF USING BED SIDE MICROSCOPY DURING GYNECOLOGICAL EXAMINATION AT THE GYNECOLOGICAL CLINIC OF THE VYBORG MATERNITY HOSPITAL, LENINGRAD OBLAST

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## Introduction

Genital tract infections, particularly sexually transmitted infections (STIs), can lead to infertility, lingering pelvic pain and pelvic adhesions, which may eventually require surgical intervention. Infertility treatment is very expensive, time-consuming and often results in loss of capacity to work.

Clinical manifestations of genital tract infections are often nonspecific. It is very difficult to differentiate genital tract infections, as well as reveal an infectious process based only on the anamnesis and on the findings of the clinical checkup. Consequently, specific laboratory tests are needed for the proper management of patients with STIs.

Infectious diseases of the genital tract are the main course of gynecological morbidity (60–65 %). Changes in the vaginal microbiocenosis, present in 9–24 % in healthy women and in 45–86 % of women patients in gynecological hospitals, are of great importance. Various STIs and changed vaginal micsobiocenosis is found in 84 % and 68 % of the pregnant women, respectively. An increase in the number of reproductive tract infections is one of the main causes of maternal and perinatal morbidity. Thus, it is vitally important for practitioners to use different methods of STI diagnostics. Because of the complexity and high cost of laboratory diagnostics concerning reproductive tract infections, it is difficult to use the whole range of diagnostic methods in all women. Obstetricians and gynecologists from the Vyborg maternity hospital have been using bedside microscopy of genital smears in everyday practice since 2003.

**The aim** of this study was to describe the experience of using bedside microscopy of genital smears in women at the Vyborg maternity hospital.

## Materials and methods

### Population

Two groups of women were examined. Group 1 (n = 6692) included women with symptoms of an STI (discharge, itching, etc.) and women with acute clinical manifestations. Group 2 consisted of 100 non-pregnant and 100 pregnant women who came to the gynecological clinic of the Vyborg maternity hospital with other problems.

**Smear preparation and microscopic examination.**

Vaginal smear investigation. Microscopy of native smears was conducted by a light microscope at a magnification of × 100 and × 400.

Cervical and urethral smear investigation. The smears were applied on a slide, dried on air for 5 sec and stained with methylene blue. After rinsing and drying, the smears were examined using a light microscope at a magnification of × 100 and × 400.

## Results

The increase in the number of bedside microscopic examinations of genital smears performed by a doctor during a patient visit is shown in Fig. 1.

In 2006, with the use of bedside microscopy in 1854 women of group 1, some pathology was revealed (80 %), where only 20 % of these women had normal (physiological) microbiocenosis. Noteworthy, the presented morbidity structure is not representative of all women visiting the gynecological clinic. This is because the group was made up of women with symptoms of an STI (discharge, itching, etc.), as well as women with acute clinical manifestations.

The structure of the different conditions revealed by bedside microscopy in 2318 women who visited the Vyborg maternity hospital is shown in Fig. 2.

Most women had bacterial vaginosis (49 %), followed by candidal vulvovaginitis (25 %), cervicitis

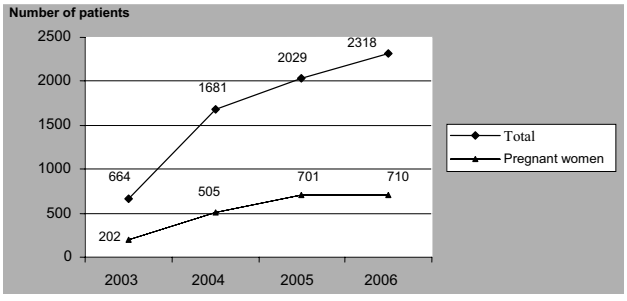


Fig. 1. The increase in the number of bedside microscopic examinations of genital smears

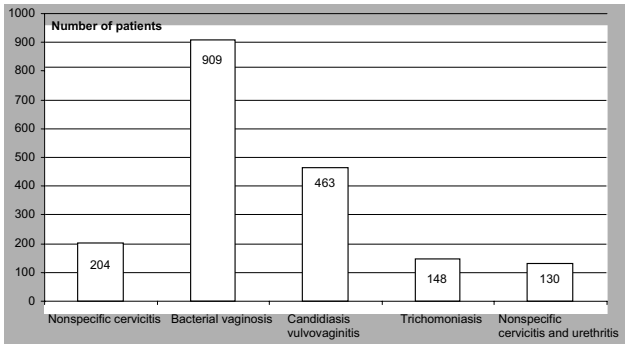


Fig. 2 The structure of pathological conditions revealed by bedside microscopy in 2318 women who visited the Vyborg maternity hospital

(11 %), trichomoniasis (8 %) and nonspecific cervicitis and urethritis (7 %).

The results in group 2 (100 women patients from the Vyborg gynecological clinic and 100 pregnant women at two departments of the Vyborg maternity hospital) are presented in Table 1. Bedside microscopy in the pregnant women in group 2 was performed on three separate occasions during pregnancy: at registration of pregnancy, on week 30 and on weeks 36/37 of pregnancy.

## Discussion

The morbidity structure analysis performed on the women in group 1 revealed that changes in the vaginal microbiocenosis (nonspecific vaginitis, bacterial vaginosis and candidiasis vulvovaginitis) were most common (78 %). Trichomoniasis was diagnosed in 5 % of the women. Cervicitis and urethritis were revealed in 17% of the patients (those patients had additional examinations to determine the etiology of the disease).

The results of examination of pregnant women indicated a high percentage (44 %) of changes in vaginal and cervical microbiocenosis. Nonspecific changes were found in 77 % of the pregnant women in group 2, a finding consistent with that noted in group 1.

In the course of pregnancy a significant decrease in general morbidity was observed. Morbidity was 37 % on week 30 of pregnancy and 22 % on weeks 36/37. We believe that these findings are evidence that the treatment of cervical and vaginal disorders during pregnancy was effective. We observed a slight decrease in the amount of candidal vaginitis during pregnancy, which is possibly connected to immune and hormone factors during pregnancy.

## Conclusions

- Microscopic investigation of genital smears during patient visits is an important aspect of the clinical examination and can be helpful in revealing the cause of symptoms. It is possible for a trained physician to perform microscopic investigations while the woman is dressing after the examination;
- in most cases a doctor can make a diagnosis and prescribe proper treatment already at the first visit, and because of this, the consultation of the patients could be more purposeful;
- specificity of bedside microscopy, when performed by a skilled doctor, approaches 100%;
- using microscopy during a patient's visit is cost effective and can save time for both the physician and the patient;
- microscopic investigation performed by a doctor during a patient's visit is fast and greatly saves laboratory resources, resources that could be used for more qualified investigations;
- when physicians perform microscopy themselves, they pay more attention to the quality of sampling, and in the case of unsatisfactory smears, they can repeat sampling;
- in our experience, doctors using bedside microscopy gain a great authority among their patients.

*Table 1*

**The results of bedside microscopy in patients at the Vyborg gynecological clinic and in pregnant women at two departments of the Vyborg maternity hospital**

| Vaginal and cervical microbiocenoses | Gynecological clinic patients (%) | The group of pregnant women from two Vyborg antenatal clinics | | |
|---|---|---|---|---|
| | | At registration of pregnancy (%) | Week 30 of pregnancy (%) | Week 36/37 of pregnancy (%) |
| Bacterial vaginosis | 46 | 9 | 3 | 5 |
| Genital candidosis | 20 | 10 | 17 | 12 |
| Trichomoniasis | 5 | 1 | 1 | 1 |
| Nonspecific colpitis | 12 | 15 | 13 | 3 |
| Cervicitis | 12 | 9 | 4 | 1 |
| Norm | 15 | 56 | 63 | 78 |

## Literature

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# DIAGNOSIS OF HUMAN PAPILLOMAVIRUS INFECTION IN SCREENING FOR CERVICAL CANCER

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■ **Ascertainment of the etiological role of human papillomavirus (HPV) in the development of cervical cancer has led to the recognition that diagnosis of HPV infection is an important element in cervical cancer screening and prevention. A number of studies have repeatedly shown that sensitivity of HPV testing in the diagnosis of cervical intraepithelial neoplasias is superior to that of cytology. In the present article current recommendations on the use of HPV testing in cervical screening are discussed: in primary screening (in combination with cytology or alone), in management of patients with atypical squamous cells of undetermined significance (ASC-US) and in the management of patients after therapy of high-grade cervical lesions. Furthermore, a brief description of tests currently used for HPV detection and typing is presented.**

■ **key words:** human papillomavirus, cervical cancer, screening

## Introduction

According to the World Health Organization (WHO), there are about 500 000 cases of cervical cancer and 250 000 cases of lethal outcomes registered annually [13]. Up to date screening of the female population with the aim of diagnosing the disease at its early stage is considered the most effective approach to prevention of cervical cancer. Efficiency of organized screening has been confirmed in many countries: in Europe and North America mortality from cervical cancer decreased by 20–60 % as a result of implementing screening programs [6]. Cytological investigation of epithelial cells of the cervix has remained the basis of cervical screening for the past decades. However, it was shown that up to 30 % of cervical cancers have been developed in women who were regularly screened [10]. Because of the limited sensitivity of cytology, false negative results are registered even in efficiently working screening programs. All this proves the necessity of searching for new screening technologies, particularly those that are based on testing for HPV.

Based on results obtained in a number of large scale studies, the following recommendations on the use of HPV tests in cervical screening were developed [5, 9, 14]:

- in primary screening in women over 30 years of age in combination with cytology or alone (this should be done foremost in countries with poorly organized cytological screening);
- in the management of women with atypical squamous cells of undetermined significance (ASC-US);
- in monitoring treatment of cervical intraepithelial neoplasia (CIN) of high grade (CIN 2/3).

There are a number of reports from several countries in Europe, the USA and Asia suggesting the usefulness of different HPV detection techniques in screening for cervical cancer [2, 4].

## HPV testing in primary cervical screening

The following findings have emerged from studies aimed at evaluating diagnostic characteristics of HPV testing as compared with cytology:

- sensitivity of HPV testing (88–100 %) is much superior to that of cytology (34–86 %);
- specificity of HPV testing (82–97 %) is slightly lower than that of cytology (78–99 %);
- sensitivity and negative predictive value of double negative (both HPV test and cytology) results are extremely high and in some investigations their meaning reached 100% [3].

A relatively low (in comparison with cytology) specificity and positive predictive value of HPV test-