# Evaluation of Effectiveness of Cervicovaginal Smear Examination in Detection of Precancerous Cervical Lesions and in Screening of Cervical Cancer

**Gaurav Agrawal[1], Jagannath Jatav[2]**


## ABSTRACT

**Introduction**: Cervical cancer is second most common cancer among female in India and is leading cause of death as well. In early stage of disease (precancerous stage) only mucosal lining of cervix is involved. At this stage, the lesion can be detected by cervicovaginal smear examination that is commonly known as pap smear examination. Detection of lesion in precancerous stage is highly beneficial to patients because disease is almost curable at this stage. Cervical cancers that diagnosed in advanced stage, by this time most of the cancers have already spread in body. Now, it becomes almost incurable or has less chances of to be cured. Aim of present study was to evaluate the cervicovaginal smear examination in detection of precancerous cervical lesion.

**Material and methods**: The present study was carried out over a period of 1 year during July 2012 to June 2013 at Index medical college and hospital, and research centre Indore. Total 210 cervicovaginal smears were collected during study period.

**Results**: In the present study of 210 cases of cervicovaginal smear, the age of patients ranged from 20 to 50 years. The maximum numbers of cases were found in the age group of 30-39 years, comprising 78 cases (37.2%). Most of the patients were present with complaints of white discharge per vagina (77.14%), followed by pelvic pain (11.43%) and intermenstrual bleeding (7.14%). On cytology, 87 (41.42%) cases were negative for intra-epithelial lesion or malignancy while 99 (47.14%) cases were positive, out of which 03 (01.42%) cases were diagnosed as malignancy.

Conclusion Cervicovaginal (pap) smear is an effective diagnostic tool for initial assessment of cervix to detect precancerous as well as inflammatory cervical lesions and in screening of cervical carcinoma.


**Keyword:** Cervicovaginal Smear, Precancerous, Cervical, Carcinoma.

## INTRODUCTION

Carcinoma cervix is the most common cancer among women in developing countries.[1] In India, an estimated 1.5 lac women develop cancer annually, about 16% of world annual incidence. Thus, cervical cancer is a common public health problem that deserves urgent attention.[2] Common symptoms of cervical cancer in early stage are abnormal vaginal bleeding, vaginal discharge and pelvic pain. In most cases, cervical cancer does not cause any noticeable Symptom in early stage.

Pap smear is one of the most reliable and effective tool that can detect abnormal cells before developing the cancer or in early stage of cancer when woman has no symptoms. Hence routine pap screening is important to detect abnormal cells in premalignant stage and apart from abnormal cells; it is also very useful in detection of infectious and inflammatory cervical lesions.

Aim of present study was to evaluate the effectiveness of cervicovaginal smear examination in detection precancerous cervical lesions and in screening of cervical carcinoma.

## MATERIAL AND METHODS

The present study was carried out over a period of 1 year during July 2012 to June 2013 at Index medical college and hospital, and research centre Indore. Cervicovaginal smears were collected from patients attending outpatient department of Obstetrics and Gynecology for various gynecological problems.

**Inclusion criteria**

1. All non pregnant women attending gynecologic OPD.
2. Women between the age group of 21-65 years.
3. Women willing to give voluntary consent for performing pap smear.

**Exclusion criteria**

1. All pregnant women
2. Women who have been treated earlier for cervical cancer.
3. Women who are presently on cancer treatment.
4. Women of age less than 21 years and more than 65 years.
5. Women not willing to give voluntary consent
6. Women who would have undergone any type of cervical surgery and hysterectomy.

All cervicovaginal smears were prepared and immediately fixed by aerosol spray fixative or by 95% ethyl alcohol for minimal 15 minutes, in Obstetrics and Gynecology department of index medical college and hospital, and research centre Indore. Then these prepared smears were received for further processing and staining in department

[1]Consultant, Department of Pathology, SRL Limited, [2]Assistant Professor, Department of Pathology, Shyam Shah Medical College, Rewa, Madhya Pradesh, India

**Corresponding author:** Dr Jagannath Jatav, F-12/3, New Doctor Colony, Arjun Nagar, Rewa MP, Pin- 486001, India

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of pathology, Index medical college and hospital, Indore. Clinical history and other data of the patients were collected at the time of slide receiving. After receiving and labeling, these cervicovaginal smears were stained by pap stain and mounted with cover slip using DPS mountant.

## RESULTS

In present study (2018), the age wise distribution revealed that 78 cases (37.2%) which comprising highest number of cases, belonged to 30-39 years of age group followed by 75 cases (35.5%) and 57 (27.1%) cases belonged to more than 40 years and 20 -29 years of age group respectively (table-1). The mean age of the population in study group was 35.7 year (Table-2).

The major presenting complaint was white discharge per vagina in 162 (77.14%) patients. Pelvic pain was the second most common complaints (11.43%). The other complaints were intermenstrual bleeding and post-coital bleeding in (7.14%) and (4.28%) of the cases respectively (Table-3).

| S.No. | Age group | number | % |
|---|---|---|---|
| 1. | 20-29 | 57 | 27.1 |
| 2. | 30-39 | 78 | 37.2 |
| 3. | ≥40 | 75 | 35.5 |
| Total | | 210 | 100 |

**Table-1:** Age wise distribution of the cases

| Total No. | Age range | Minimum age | Maximum age | Mean age | Standard deviation |
|---|---|---|---|---|---|
| 210 | 30 | 20 | 50 | 35.7 | 8.5 |

**Table-2:** Mean age of the study subjects

| S.No | Symptoms | No. | % |
|---|---|---|---|
| 1. | Watery discharge PV | 162 | 77.14 |
| 2. | Pelvic pain | 24 | 11.43 |
| 3. | Intermenstrual bleeding | 15 | 7.14 |
| 4. | Post coital bleeding | 09 | 4.28 |
| Total | | 210 | 100 |

**Table-3:** Chief presenting complaints of patients

On cytology, 87 (41.42%) cases were negative for intra-epithelial lesion or malignancy and 24 (11.42%) cases showed atypical squamous cells of undermined significance while 99 (47.14%) cases were positive, out of which, 69 (32.85%) were diagnosed as low grade squamous intra-epithelial lesions, 27 (12.85%) cases as high grade squamous intra-epithelial lesions and 03 (01.42%) cases as squamous cell carcinoma (Table-4).

In the present study, the ratio of premalignant to malignant lesions was 32:1. Among the premalignant lesions, LSIL constituted 69 (69.69%) of cases and HSIL constituted 27 (27.27%) of cases (Table-5).

## DISCUSSION

The present study was conducted to evaluate the role of cytology in screening of inflammatory, premalignant and malignant cervical lesions. An attempt has been made to

| S.No. | Lesion | Cases | |
|---|---|---|---|
| | | Number | % |
| 1 | NILM | 87 | 41.42 |
| 2 | ASCUS | 24 | 11.42 |
| 3 | LSIL | 69 | 32.85 |
| 4 | HSIL | 27 | 12.85 |
| 5 | SCC | 03 | 01.42 |
| Total | | 210 | 100% |

**Table-4:** Spectrum of cervical lesion based on cytological study

| S. No. | Lesion | Cases | |
|---|---|---|---|
| | | Number | % |
| 1 | Malignant | 03 | 03.30 |
| 2 | LSIL | 69 | 69.69 |
| 3 | HSIL | 27 | 27.27 |
| Total | | 99 | 100 |

**Table-5:** Distribution of neoplastic lesions based on cytology

| S. No. | Study | Mean age (years) |
|---|---|---|
| 1 | Singh Kavita N et al[3] | 38.2 |
| 2 | Cronje HS et al[4] | 34.4 |
| 3 | Dhaubhadel et al[5] | 31.1 |
| 4 | Goel A et al[6] | 32.6 |
| 5 | Present study | 35.7 |

**Table-6:** Comparison of mean age in different studies

| S. No. | Study | Premalignant | Malignant | Ratio |
|---|---|---|---|---|
| 1 | Lozowski et al[10] | 125 | 02 | 62.5:1 |
| 2 | Klinkhaemer et al[11] | 116 | 04 | 29:1 |
| 3 | Present study | 96 | 03 | 32:1 |

**Table-7:** comparison of neoplastic lesions

| S. No. | Study | LSIL | HSIL | Carcinoma | Total |
|---|---|---|---|---|---|
| 1 | Lozowski et al[10] | 36 | 89 | 02 | 127 |
| 2 | Klinkhaemer et al[11] | 08 | 108 | 04 | 120 |
| 3 | Kashyap et al[12] | 1253 | 657 | 213 | 2123 |
| 4 | Present study | 69 | 27 | 03 | 99 |

**Table-8:** comparison of distribution of neoplastic lesions

compare the various parameters in the study with results obtained by different workers.

The mean age in present study was 35.7 years which was comparable to the study done by Cronje SH et al[4] in which the mean age was 34.4 years.

White discharge per vagina was the most common presenting complaint (77.14%) among patients in the present study. The second most common complaint was pelvic pain in (11.14%) of the cases. Other complaints of present study were intermenstrual bleeding (7.14%) and post coital bleeding (4.28%).

Saha R and Thapa M[7] reported vaginal discharge as the most common complaint in their study. DivyaHegde et al[8] also reported white discharge per vagina as the most common presenting complaint in cases of precancerous and malignant lesions. Dhaubhadel et al[5] reported pelvic pain the most common complain (56.86%) followed by white discharge per vagina (27.43%).

In present study, 41.42% of the cases were negative for intra-epithelial lesion or malignancy. Twenty four (11.42%) cases showed atypical squamous cells of undetermined significance. Sixty nine (32.85%) were diagnosed as low grade intra-epithelial lesions, 27 (12.85%) as high grade intra-epithelial lesions and 03 cases as squamous cell carcinoma.

In the study done by Yeoh et al[9], the percentage of low grade intra-epithelial lesions was similar to present study (28.6%) but the percentage of high grade intra-epithelial lesions (36.7%) and carcinoma (3.5%) were higher than that of present study.

In the present study, the ratio of premalignant to malignant lesions was 32:1 which is comparable to the study done by Klinkhaemer et al[11] in which the ratio was 29:1. Whreras the this ratio was higher (62.5:1) in a study conducted by Lozowski et al.[10]

The percentage of LSIL and HSIL was 69.69% and 27.27% respectively in present study. Similar findings were reported in a study of by Kashyap V et al[12] in which LSIL constituted 59.02% and HSIL constituted 30.94% of the premalignant lesions. Whereas Lozowski et al[10] and Klinkhaemer et al[11] have reported a higher percentage of HSIL as compared to LSIL. The percentage of carcinoma reported in present study is almost similar in study conducted by Klinkhaemer et al[11] whereas lower in study done by Lozowski et al[10] and higher in study of Kashyap V et al.[12]

## CONCLUSION

Cervicovaginal (pap) smear is an effective diagnostic tool for initial assessment of cervix to detect precancerous as well as inflammatory cervical lesions and in screening of cervical carcinoma.

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