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## A record based study of 3 years of Pap smear screening with follow up of all abnormal reports with colposcopy and biopsy

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### Abstract

**Aims:** To study Pap smear screening with follow up of all abnormal reports with colposcopy and biopsy.

**Setting and design:** This is a retrospective study conducted on 1980 patients to evaluate all previously conducted cervical smears of patients who attended the Obstetrics and Gynaecology outpatient department at the teaching tertiary care hospital during the period August 2014 to September 2017 for a period of 3 years. Pap smear is done in all OPD patients as a part of routine screening.

**Materials and methodology:** Pap smear is done in all OPD patients as a part of routine screening. We analysed all pap smears from August 2014 to September 2017 for a period of 3 years. The cytological interpretation of the smears was made according to Bethesda system. We also analysed subgroups of abnormal reports. Abnormal pap smears were subjected to colposcopy guided cervical biopsies for histopathological examination.

**Results:** Pap smear was taken in 1980 patients over a period of 3 years. Of the 1545 (78.9%) abnormal cases, only 136 cases were reported to have epithelial cell abnormality. The age range of patients with epithelial cell abnormality was 20 to 70 years and the mean age was 44.1 years. The diagnosis of the 136 abnormal cases revealed 13 cases with ASC-US, 106(5.3%) cases of LSIL, 14 (0.7%) of HSIL, 3(0.1%) cases of malignancy. 336(16.9%) smears were reported normal cases and 99 (5 %) smears were unsatisfactory or inadequate samples. A total of 64 had colposcopy abnormalities and required biopsy. Of which 3 were diagnosed of chronic cervicitis, 21 were CIN I, 23 Were CIN II, 5 were CIN III, 12 cases were of frank malignancy, most common being squamous cell carcinoma 11 cases and adenocarcinoma in 1 case.

**Conclusion:** Pap smear is a noninvasive, simple procedure deserves to be implemented as a routine screening test in OPD. This has aided in early diagnosis of pre-malignancy and malignancy. Histopathological examination is correlating well with Pap smear and clinical presentation.

**Keywords:** Carcinoma cervix, colposcopy, biopsy, Pap smear

### Introduction

Cancer of the cervix is a global health problem, it comprises approximately 12% of all cancers among women globally [1]. It is the most common cancer among women after breast and colorectal cancer in the world, but in India and other developing countries cervical cancer is the leading cause of mortality and morbidity. According to National Cancer Registry Programme of India, cancers of uterine cervix and breast are leading malignancies seen in Indian women [2].

Women in these countries usually present to the clinic only when they have symptoms, such as pain, discharge, and/or abnormal bleeding [3]. Cancer of cervix is readily preventable, by early detection and appropriate timely treatment of its precursor lesions by simple Pap screening test. Screening of cervical cancer is effective, feasible and affordable way for early detection and management is a public health priority. Five screening methods, namely naked eye visual inspection of the cervix with application of diluted acetic acid (VIA), examination with Lugol's iodine (VILI) or with a magnifying device (VIAM), the Pap smear and human papilloma virus (HPV) testing with high-risk probe of the hybrid capture-2 assay (HC2), are used to detect the cervical cancer in precancerous stage [4].

Papanicolaou (Pap) smear is a simple, safe, non-invasive and effective method for detection of precancerous, cancerous and non-cancerous changes in the cervix [5]. Conventional cervical cytology is the most widely used cervical cancer screening test in the world and cytology

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screening programmes in several developed countries have been associated with impressive reduction in cervical cancer burden [6].

Though Pap smear is a routine screening test, the overall sensitivity in detection of high grade squamous intraepithelial lesion (HSIL) is 70 - 80% [7].

The role of HPV in development of cervical cancer is proved beyond doubt. If Pap screening is associated with HPV DNA testing then we can increase the sensitivity [3].

Usually Pap smear screening test is recommended starting around 21 years of age until the age of 65 years. In general, in countries where Pap smear screening is routine, it is recommended that sexually active women should seek regular Pap smear testing. Guidelines on frequency vary from every three to five years. If results are abnormal, and depending on the nature of the abnormality, the test may need to be repeated in six to twelve months [8].

More sensitive and specific investigations like colposcopy-guided cervical biopsy are needed to diagnose and prevent further progression to cervical cancer [9].

In 1988, the Bethesda system of terminology has been introduced to sub-classify the lesions into grades: high grade and low grade Squamous Intraepithelial Lesions (SIL) for Pap smear reporting and some studies reported comparison of various terminologies [10, 11].

The Bethesda System (TBS) for reporting the results of cervical cytology was developed as a uniform system of terminology that could provide clear guidance for clinical management [12].

The aim of the study was to study and analyse routine Pap smear screening with follow up of all abnormal reports with colposcopy and biopsy.

## Materials and Methods

This is a retrospective study conducted on 1980 patients to evaluate all previously conducted cervical smears of patients who attended the Obstetrics and Gynaecology outpatient department at the teaching tertiary care hospital during the period August 2014 to September 2017 for a period of 3 years. Pap smear is done in all OPD patients aged 20 -70 years as a part of routine screening. All patients who had undergone Papanicolaou (Pap) smear testing during this period were included in the study.

Smears were taken of all patients who presented with complaints of vaginal discharge, post-coital bleeding, intermenstrual bleeding, and pain in lower abdomen as well as those who had no complaints and had come for routine cervical screening. Relevant clinical data and Pap smear reports were obtained and data was noted in a structured Pro forma.

The smears were obtained with the help of Ayer's spatula and cytobrush to collect specimen from the squamocolumnar junction. The cellular material obtained on the spatula and cytobrush was quickly smeared on a clean glass slide. Two smears were prepared for each case. The glass slides were then fixed immediately by immersing them into the coplin jar containing 95% ethyl alcohol. The smears were stained with Papanicolaou stain. Smears were reported as per the Bethesda System [13].

Evaluation was done by Cytology using Bethesda Classification [13].

- Within normal limits
- Infection (specify organism)
- Reactive/reparative changes
- Atypical squamous cells of undetermined significance (ASCUS)

- Atypical glandular cells of undetermined significance (AGUS)
- Low Grade Squamous intraepithelial invasion (LSIL)
- High Grade Squamous intraepithelial invasion (HSIL)
- Invasive carcinoma

We also analysed subgroups of abnormal reports. Abnormal pap smears were subjected to colposcopic guided cervical biopsies for histopathological examination.

## Statistical analysis

Data were analysed by SPSS and descriptive statistics were presented as frequencies and percentages.

## Results

In our study, we analysed 1980 pap smears taken from women coming from Gynaecology OPD of Subbaiah Institute of medical sciences, Shimoga aged 20 - 70 years presenting with different gynaecological complaints and as a routine screening test. Maximum number of patients (32.68 %) was in the age group of 31 - 40 years (fourth decade).

Of the 1545 (78.9%) abnormal cases, only 136 cases were reported to have epithelial cell abnormality. The age range of patients with epithelial cell abnormality was 20 to 70 years and the mean age was 44.1 years.

The diagnosis of the 136 abnormal cases revealed 13 cases with ASC-US, 106(5.3%) cases of LSIL, 14 (0.7%) of HSIL, 3(0.1%) cases of malignancy. 336(16.9%) smears were reported normal cases and 99 (5 %) smears were unsatisfactory or inadequate samples. (Table 1)

A total of 64 had colposcopic abnormalities and required biopsy. Of which 3 were diagnosed of chronic cervicitis, 21 were CIN I, 23 Were CIN II, 5 were CIN III, 12 cases were of frank malignancy, most common being squamous cell carcinoma 11 cases and adenocarcinoma in 1 case. (Table 2)

## Discussion

With the changes in the life styles and demographic profiles in developing countries, non-communicable diseases are emerging as an important health problem which demand appropriate control program before they assume epidemic propagation. Cancer has been a major cause of morbidity and mortality. According to National Cancer Registry Program of India, cancers of uterine cervix and breast are the leading malignancies seen in females of India. There should be an effective mass screening program aimed at specific age group for detecting precancerous condition before they progress to invasive cancers [14, 15].

Cancer cervix is considered to be an ideal gynaecological malignancy for screening as it meets both test and disease criteria for screening. It has a long latent phase during which it can be detected as identifiable and treatable premalignant lesions which precede the invasive disease and the benefit of conducting screening for carcinoma cervix exceeds the cost involved [16].

Conventional cervical cytology is the most widely used cervical cancer screening test in the world. Cervical cytology screening program in several developed countries has been associated with impressive reductions in cervical cancer burden. The WHO recommends that in developing countries, women aged 18 - 69 years should be screened for cervical cancer every 3 years [17].

In our study we have taken 1980 Pap smears taken from women presenting to Department of OBG, Subbaiah Institute Of Medical Sciences, Shimoga between 20 to 70 years presenting with different Gynaecological complaints and as routine beyond the

age of 45 years. In study conducted by Sunita *et al.* [18] 560 Pap smear reports were analysed. Whereas in study conducted by Patel *et al.* [3] 995 Pap smear reports were analysed.

In our study, the youngest age screened was 20 years and oldest age was 69 years, and maximum number of women was in 30 - 39 years age group (50.1%). In the study conducted By Sunita *et al.* [18], maximum number of women was in 31 - 40 years age group (32.68%). In the study conducted by Patel *et al.* [3], maximum number of women aged 15 - 30 years was studied.

The rate of unsatisfactory smear was 5% in the present study, which was higher than that in the study conducted by Bhatla *et al.* [19] (1.36%) and in the study conducted by Patel *et al.* [3]. The unsatisfactory rate is an important quality assurance indicator in cervical cytology as it identifies women who are being inadequately screened. High rate of unsatisfactory smears could be due to sampling errors. Hence regular training and feedback is essential.

In our study abnormal Pap smear reports were 1545 (78.9%), whereas in study conducted by Sunita *et al.* [18] 433(77.32%) reports were abnormal. In study conducted by Patel *et al.* [3] abnormal Pap smear reports were 689(69.2%). Inflammatory smear reports were 1409(71.2%) in our study, whereas in study conducted by Sunita *et al.* [18] 403(71.96%) reports were inflammatory and in study conducted by Patel *et al.* [3] inflammatory Pap smear reports were 572(57.5%).

Smears showing ASCUS (Atypical squamous cells of undetermined significance) were 13(0.6%) in our study. In study conducted by Sunita *et al.* [18] 13(2.3%) reports showed ASCUS and in study conducted by Patel *et al.* [3] reports showing ASCUS were 41(4.1%).

Smears showing LSIL (Low grade squamous intraepithelial lesion) were 106 (5.35%) in our study. In study conducted by Sunita *et al.* [18] 11(1.9%) reports gave LSIL and in study conducted by Patel *et al.* [3] reports showing LSIL were 41(0.1%).

In our study HSIL (High grade squamous intraepithelial lesion) reports were 14(0.7%), whereas in study conducted by Sunita *et al.* [18] 2(0.3%) reports gave HSIL. In study conducted by Patel *et al.* [3] HSIL reports were 1(0.1%). Smears showing squamous cell carcinoma were 2(0.1%) in our study. In study conducted by Sunita *et al.* [18] 3(0.5%) reports gave squamous cell carcinoma and in study conducted by Patel *et al.* [3] reports showing squamous cell carcinoma were 7(0.7%)

It is accepted worldwide that early detection of precancerous lesions of cervix can be done by cytological examination of cervix by Pap smears. If not diagnosed and treated early, these precancerous lesions are likely to progress to invasive Cancers. It is proven that the cytological screening programs conducted in advanced countries played a major role in reducing mortality and morbidity due to Cancer Cervix.

It is seen that reports in our study like many other studies have shown the importance of Pap smear test in screening cervical cancer and guiding the clinician about their treatment strategy. By increasing health awareness and performing Pap smear screening programs, the incidence of cervical carcinoma can be decreased [20].

**Conclusion**

Pap smear tests are inexpensive and affordable by the patients. This procedure does not need experts and specialists for collection of smear. Early detection of possibility of malignancy Helps in prompt treatment at early stage and prolongation of life expectancy of many women and reduces the mortality and morbidity of cancer cervix. Till today, Pap smear test is the most useful screening procedure for cervical cancer.

The morbidity and mortality caused by cancer uterine cervix could be significantly reduced by an active cervical smear screening (Pap smear) programme. This study emphasizes the importance of Pap smears screening for early detection of premalignant and malignant lesions of cervix. In our study epithelial cell abnormality values correlate well with those in literature, proving that the methods are used reliably at our institution.

Pap is a relatively less invasive and a simple procedure to diagnose cervical lesions in developing countries. But sometimes, there can be obscuring of the cellular details by blood, especially in malignant cases. In such cases, Biopsy is helpful and confirmatory.

**Table 1:** Distribution of cases under various diagnostic criteria in Pap smear

Cyto diagnosis	Number of patients	Percentage of total
Normal	336	16.9%
Inflammatory	1409	71.2%
ASCUS	13	0.6%
LSIL	106	5.3%
HSIL	14	0.7%
Malignancy	3	0.1%
Unsatisfactory	99	5%
	1980	

ASCUS- atypical squamous cell of undetermined significance. LSIL- low grade squamous intraepithelial lesion, HSIL- high grade squamous intraepithelial lesion.

**Table 2:** Table showing histopathological diagnosis after biopsy

Diagnosis	Number n= 64	Percentage
Chronic cervicitis	3	4.6%
CIN I	21	32.8%
CIN II	23	35.9%
CIN III	5	7.8%
SCC	11	17.1%
Adenocarcinoma	1	1.5%

**Table 3:** Comparison of study at Subbaiah institute of medical sciences, Shimoga with previous studies for abnormal cervical pap smears.

Abnormal smears	Patel <i>et al.</i> [3]	Sunita <i>et al.</i> [18]	Saha. D <i>et al.</i> [21]	Present study
Inflammatory	57.5%	71.96%	58.54%	71.2%
ASCUS	4.1%	2.3%	5.92%	0.6%
LSIL	0.1 %	1.9%	1.74%	5.35%
HSIL	0.7%	0.3%	0.35%	0.7%
SCC	0.7%	0.5%	1.04%	0.1%

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