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Original Research Article

# CORRELATION OF PAP SMEAR AND COLPOSCOPIC FINDING WITH DIRECTED BIOPSY TO ASSESS THE ADVANTAGE OF CONCURRENT TESTING BY CYTOLOGY AND COLPOSCOPY IN THE DETECTION OF CERVICAL NEOPLASM

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**Abstract**

**Background**: Cervical cancer was the second most common cancer among women 15-44 years of age and in 2018 it was the fourth most frequent cancer and cause of cancer death among all women in the world

**Methods:**Women (18-65 yrs) attending Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur were recruited for study. After applying inclusion and exclusion criteria written and informed consent were taken from all study participants

**Results:** On histopathology report we found that 10% had normal inflammation followed by 9.33% had carcinoma in situ, 8% had CIN-2, 6.67% had CIN-1, 5.67% had CIN-3 and Squamous cell carcinoma each.

**Conclusion:** Pap smear and colposcopy both the tests can be used to complement each other in a hospital based screening programme, where facilities for both modalities are available. Hence use of single visit approach in which cytology, colposcopy and guided biopsy all are done in single sitting, and treated accordingly in resource poor countries like ours will enable maximal utilization of scarce medical resources.

**Keywords:** Pap smear, CIN, Cervical cancer

## Introduction

Cervical cancer was the second most common cancer among women 15-44 years of age and in 2018 it was the fourth most frequent cancer and cause of cancer death among all women in the world[1]. More than half a million women were diagnosed and over a quarter of a million women died of cervical cancer in 2018, with over 85% of these women living in low resource countries, with low and medium human development indexes[2,3]. These countries were predominately located in sub-Saharan Africa, Central and South America, and Asia[4]. These low resource areas bearing the brunt of the cervical disease burden mirror areas with low healthcare provider (physician, nurse, midwife) to population ratios, with 85% of WHO member states having less than one physician per 1,000 population[5]. These data illustrate the obvious global cervical cancer health inequity, with women living in remote, low resource areas, without access to healthcare personnel, bearing the bulk of the disease and mortality burden. However, in India it leads the list of cancers afflicting the female genital tract, accounting for roughly 80% of these cases.[6] It accounts for 7% of all female malignancies in developed countries as against 24% in developing countries.[7,8]

Colposcopy is an integral part of the management of women presenting with abnormal cervical cytology and those with lesions in the lower genital tract indicative of intraepithelial neoplastic disease. Colposcopy as a subjective modality has a sensitivity for the detection of intraepithelial disease in the range of 60-75%. When employed with exfoliative cytology, this sensitivity can be increased to >90%.[9] Colposcopy as an adjunctive screening test has high sensitivity and can provide immediate results for evaluation of cervical lesions. Executing targeted biopsy, colposcopy can be useful in defining diagnosis of preinvasive lesions and carcinoma of cervix.[25]It is an optical method of visualizing lower genital tract under bright illumination using stereoscopic vision. It is a simple non-invasive outpatient department procedure. Colposcopic directed biopsies of suspicious area provide the final confirmation of diagnosis in most of the situations.[10] It is used to determine the biopsy site in women who have abnormal Pap test results and, in an effort to increase the accuracy of colposcopic diagnosis and facilitate communication. It has predominately been used for identifying the biopsy site for secondary histological diagnosis when abnormal Pap results are found.[11]

The aim of the study was correlation of Pap smear and colposcopic finding with directed biopsy to assess the advantage of concurrent testing by cytology and colposcopy in the detection of cervical neoplasm.

## Material & Methods

**Study Type**: Hospital based observational study

**Study Design:** Prospective study

**Study Area:** Department of Obstetrics and Gynecology, SMS Medical College, Jaipur

**Study Period:** Feb 2020 onwards till sample size is reached

**Study Group:** Women of age 18-65 yrs attending OPD of Department of Obstetrics and Gynaecology.

**Inclusion Criteria**

1. Sexually active women with age 18-65 yrs.

2. Patient with symptoms like white discharge, postcoital bleeding, intermenstrual bleeding, lower abdominal pain, backache, postmenopausal bleeding, vulval itching, frequent and burning micturation and something coming out of vagina.

3. Patient with unhealthy cervix (erosion, bulky cervix, bleeding on touch, ulcer, simple leukoplakia, keratinisation and hypertrophied cervix).

**Exclusion Criteria**

1. Pregnant women
2. Patient not giving consent
3. Diagnosed case of Ca cervix
4. Patient with total hysterectomy

**Methodology**

Women (18-65 yrs) attending Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur were recruited for study. After applying inclusion and exclusion criteria written and informed consent were taken from all study participants.
A detailed medical, surgical, obstetric and menstrual history was taken. After doing perspeculum and pervaginal examination pap smear and colposcopy were done.
PAP smear was taken from ectocervix and endocervix using Ayer's spatula and cytobrush and the scrapings were fixed by 95% ethyl alcohol. PAP smears score based on Revised Bethseda scoring system.

Colposcopic examination were done using colposcope model 150 FC with magnification between 10X to 12.5X. Examination of cervix was done with green filter and saline application. Applying 3% acetic acid and lugol's iodine (normal squamous epithelium which contain glycogen turns brown) to the cervix and observing at junction of squamous cell erosion, papillary lesions, acetowhite areas and vascular designs.

Findings on colposcopic examination were recorded and diagnosis were made based on Modified colposcopic Reid Index.

Colposcopic biopsies were performed and samples were saved in formalin and were send for HPR under IM sedation and paracervical block with 1% lignocaine injection. Findings of the slides were categorized as chronic cervicitis, cervical intraepithelial neoplasia I, II and III, squamous cell carcinoma and adenocarcinoma according to WHO.

Final correlation of pap smear and colposcopy were done on the basis of histopathology.

**Statistical Analysis**

Continuous variables were summarized as Mean and Standard Deviation, whereas nominal / categorical variables as proportion (%). Unpaired't' test and parametric test were used for analysis of continuous variables while chi-square test / Fischer exact test and other non- parametric test were used for normal / categorical variables. p-value< 0.05 were taken as significant. MEDCALC 16.4 version software were used for all statistical analysis.

**Observation**

**Table 1: Distribution according to demographic profile**

| | |
|---|---|
| Age (Mean± SD) | 37.49±10.16 Yrs |
| Menarche (Mean± SD) | 11.40±1.28 Yrs |
| Age at marriage (Mean± SD) | 18.08±2.23 Yrs |
| Age of 1st conception(Mean± SD) | 19.55±2.61 Yrs |
| Hindu : Muslim | 221 : 79 |
| Urban : Rural | 110 : 190 |

The mean age of cases was 37.49 years with majority were in age group 31-40 years (33%) followed by ≤30 years (32%).73.67% cases were Hindu and 26.33% cases were Muslims. 36.67% cases were from urban area and 63.33% cases were from rural area.

**Table 2: Distribution according to Pap smear grading**

| Pap smear grading [Bethseda system] | Numbers | % |
|---|---|---|
| ASC-H | 12 | 4.00 |
| ASCUS | 20 | 6.67 |
| Cervical dysplasia | 13 | 4.33 |
| HSIL | 15 | 5.00 |
| Inflammatory | 104 | 34.67 |
| LSIL | 26 | 8.67 |
| NILM | 13 | 4.33 |
| Normal | 87 | 29.00 |
| Squamous metaplasia | 10 | 3.33 |
| Total | 300 | 100.00 |

According to Pap Smear Grading mostly (34.67%) cases had inflammatory cervix findings followed by 8.67% had LSIL, 6.67% had ASCUS, 5% had HSIL, 4.33% had cervical dysplasia and NILM each, 4% cases had ASC-H, 3.33% had squamous metaplasia.

**Table 3: Distribution according to Colposcopy grading**

| Colposcopy grading [Modified reid index] | Numbers | % |
|---|---|---|
| 0 | 107 | 35.67 |
| 1 | 64 | 21.33 |
| 2 | 37 | 12.33 |
| 3 | 45 | 15.00 |
| 4 | 21 | 7.00 |
| 5 | 19 | 6.33 |
| 6 | 4 | 1.33 |
| 7 | 3 | 1.00 |
| Total | 300 | 100.00 |

According to Colposcopy grading 35.67% had 0 grading followed by 21.33% had grade-1, 12.33% had grade-1, 15% had grade-3, 7% had grade-4, 6.33% had grade-5, 1.33% had grade-6 and only 1% had grade-7.

**Table 4: Distribution according to Histopathology report**

| Histopathology report | Numbers | % |
|---|---|---|
| Carcinoma in situ | 28 | 9.33 |
| CIN 1 | 20 | 6.67 |
| CIN 2 | 24 | 8.00 |
| CIN 3 | 17 | 5.67 |
| Normal | 164 | 54.67 |
| Normal inflammation | 30 | 10.00 |
| Squamous cell carcinoma | 17 | 5.67 |
| Total | 300 | 100.00 |

On histopathology report we found that 10% had normal inflammation followed by 9.33% had carcinoma in situ, 8% had CIN-2, 6.67% had CIN-1, 5.67% had CIN-3 and Squamous cell carcinoma each.

## Discussion

Cervical cancer remains an important cause of mortality among young women in developing countries including India, but due to easy accessibility of cervix, the ease of detecting abnormal tissues before it progresses to invasive cervical cancer using relatively inexpensive technologies cancer of cervix is preventable, unlike other type of cancers. So present study was conducted on 300 symptomatic women attending OPD of Obstetrics and Gynaecology department of SMS. Medical College, Jaipur, Rajasthan, India. All women were subjected to Pap smear and Colposcopy followed by biopsy in selected cases.

According to Pap Smear Grading in our study mostly (34.67%) cases had inflammatory cervix findings followed by 8.67% had LSIL, 6.67% had ASCUS, 5% had HSIL, 4.33% had cervical dysplasia and NILM each, 4% cases had ASC-H, 3.33% had squamous metaplasia. Garg and Desai[12] found that Among 15 women with abnormal pap smear findings,10 women had abnormal colposcopy too while 77 women with abnormal colposcopy, only 9 women had abnormal pap smear findings comprising of 5 ASCUS, 1 ASC-H, 2 LSIL, 1 HSIL. Manjula A[13]study shows that Cytological diagnosis was inflammatory smear in 32 (64%) cases followed by LSIL in 7(14%), HSIL in 6(12%)] and SCC in 2(4%). Seshadri L et al[14]study showed CIN of all grades in 101(43.3%) cases, 14(6.1%) invasive carcinoma and non- neoplastic in 118(50.6%) cases (Manjula A-12). On PAP smear Joshi et al[15] reported 64% were NILM, and frank malignancy was reported as 2% cases, low-grade squamous intraepithelial lesion and high-grade squamous intraepithelial lesion was reported 17% and 12%, respectively. Bhadarka et al[16]reported 33.6 % of smear were HSIL, 25.3 % were LSIL, 21.3 % came as inflammatory smear, 12.8% showed ASCUS, 8.6 % were normal, 1.3% showed adenocarcinoma.

According to Colposcopy grading 35.67% had normal colposcopic findings followed by 21.33% had grade-1, 12.33% had grade-1, 15% had grade-3, 7% had grade-4, 6.33% had grade-5, 1.33% had grade-6 and only 1% had grade-7 findings. Garg and Deasi[12] study shows that 21% of all symptomatic women had normal colposcopic findings while 38.5% had abnormal colposcopy, 28.5% had miscellaneous findings and 12% had indecisive colposcopic findings. Malur PR et al[17] in his study on sequential screening with cytology and colposcopy in detection of cervical neoplasia on 190 symptomatic women and women with unhealthy cervix reported positive colposcopy in 37.89% (72/190) cases. Manjula A[13]study shows that Colposcopic diagnosis was inflammatory in 27 (54%) cases followed by cervical intraepithelial neoplasia (CIN) 1 in 12 (24%) patients.

On histopathology report we found that 10% had normal inflammation followed by 9.33% had carcinoma in situ, 8% had CIN-2, 6.67% had CIN-1, 5.67% had CIN-3 and Squamous cell carcinoma each. Garg and Deasi[12]found that 11 women (55% of all biopsies) had chronic non-specific cervicitis, 5 women (25%) had mild dysplasia, 2 women (10%) had moderate dysplasia, 2 women (10%) had non-keratinizing squamous cell carcinoma. Manjula A[13]study shows that Histological diagnosis was chronic nonspecific cervicitis among 33(66%) cases and CIN-19 (18%) cases. Joshi et al[15] reported that maximum number of cases on histopathological examination were those of infection among them majority had chronic cerivicitis (48%). Cervical Intraepithelial lesions were seen in 43 cases. CIN I was seen in 28 cases and CIN II and CIN III were reported 15%, and SCC and adenocarcinoma were reported 2% cases, respectively. Similar study reported by Bodal and Brar[88] reported adenocarcinoma in 2% cases only

## Conclusion

Carcinoma cervix is painstaking to be preventive disease as it has a long pre-invasive state, accessibility of screening procedures and effectual management of pre-invasive lesions. Earlier diagnosis of CIN is compulsory. Colposcopy can be used as screening tool for detecting pre-cancerous lesions.

Pap smear and colposcopy both the tests can be used to complement each other in a hospital based screening programme, where facilities for both modalities are available. Hence use of single visit approach in which cytology, colposcopy and guided biopsy all are done in single sitting, and treated accordingly in resource poor countries like ours will enable maximal utilization of scarce medical resources.

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