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# A COMPARATIVE EVALUATION BETWEEN CERVICAL CYTOLOGY AND VIRAL BIOMARKERS IN EARLY DETECTION OF CERVICAL INTRAEPITHELIAL LESIONS.

Laboratory Medicine

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## ABSTRACT

Cervical cancer is a public health problem in developing countries like India, so much so that India alone accounts for one-quarter of the worldwide burden of cervical cancers.[1] It is the one of the leading causes of cancer mortality, accounting for 17% of all cancer deaths among women aged between 30 and 69 years. Every year in India, 122,844 women are diagnosed with cervical cancer and 67,477 die from the disease.[2] Cervical cancer is a leading form of cancer among women living in low resource regions of the world and often kills women at young age when they are still raising families. Cervical cancer due to its slow progression from precancerous lesions to frank malignancy and easy accessibility to examination, is highly amenable to screening. The three screening modalities are Cervical Cytology Screening (Pap Smear), Visual Inspection, and HPV DNA test. Squamous intraepithelial lesions are viewed as precancerous lesions exhibiting many of the morphological characteristics of invasive carcinomas, identification of these entities is the focus of cervical screening. Persistence of high-risk HPV infection after initial infection is highly predictive of a lifetime risk of pre-invasive and invasive cervical neoplasia. The HPV genotype seems to be the most important factor in persistence, with HPV-16 and HPV-18 being the most likely to persist. The aim of this study was to evaluate concurrently the efficacy of Cervical cytology, HPV PCR methods for risk assessment in an attempt to define the most efficient combination, so as to know which one is more applicable and accurate in cervical cancer screening strategies. The present prospective observational study was conducted in Department of Pathology, NSCB medical college and hospital, Jabalpur, M.P. from 1st February 2019 to 31st July 2020, with the primary aim of to assess cytomorphological incidence of various lesions of uterine cervix by Bethesda system and to study the biomarker HPV-DNA testing by PCR in case of abnormal cervical findings and to correlate the findings and results of cytology with the histopathology reports. This study had a total population of 140 women who attended the gynaecology OPD and fulfilled the inclusion criteria were enrolled in study. Per speculum examination was done and Pap smear examination was taken followed by colposcopy guided cervical biopsy in the symptomatic females. Out of 140 ,60 samples were tested for high HPV 16 and 18 using RTPCR. The maximum numbers of the patients were in third decade of life, followed by fourth decade. Maximum numbers of cases were reported as inflammatory smear. ASCUS and HSIL was seen commonly in the age group of 31 to 40 years. Most common presenting complaint was white discharge 55.71 % .Erosive cervicitis (41.4%) was the most common histopathological finding. HPV DNA testing showed only 6.7 % positivity. 16.67 % Of squamous intraepithelial lesions were positive for HPV and the most prevalent HPV genotype was found to be HPV type 16. Conclusion: Pap smear evaluation and HPV typing are most efficient combination for mass cervical screening programmes

## KEYWORDS

HPV PCR; Cervical intraepithelial lesions; cervical cytology

## INTRODUCTION:

According to the International Agency for research on cancer (IARC), the cancer burden has risen to 18.1 million new cases and 9.6 million deaths, globally in 2018.At present cervical cancer ranks fourth in incidence (6.6%) as well as in mortality (7.5%) in women worldwide and this affects greater in the low-income countries compared to established market economics. [1]

It has been statistically suggested that, India alone contributes about 122,844 cervical cancer cases every year [2] The cervical cancer is a malignancy unique in the character that can be prevented with early diagnosis, periodic screening and regular follow up and appropriate treatment, can reduce mortality and improve the outcomes. Effective screening is the first step toward reducing the burden of cancer cervix. The systemic application of a test or inquiry to identify individuals at sufficient risk of a specific disorder to warrant further investigation or direct preventive action, amongst persons who have not sought medical attention on account of that disorder. [3]

Experience from screening programs from the developed countries have shown to reduce the incidence and mortality rates of cervical cancer. Different screening techniques such as visual inspection with Lugol's iodine, Cervical Cytology screening (Pap smear) and HPV DNA testing. Papanicolaou (Pap) cervical cytology examination has a relatively low sensitivity of 50 to 75% in detecting HGSIL, with high discrepancies between laboratories [4,5]. Furthermore, about 10% of Pap smears classified as LGSIL or atypical squamous cells of undetermined significance/ atypical glandular cells of undetermined significance (ASCUS/ AGUS) in reality have a high-grade disease [6,7].

Molecular detection of the virus as well as HPV typing, provides important information for prognosis and help in formulation of best treatment strategy [8]. As it is seen that >90% of HPV infections are transient, the challenge is to identify those infected women who are at risk of developing high-grade lesions and cervical cancer without overtreating those with infections that are likely to resolve [9].

The worldwide prevalence of HPV is high ranging from 9-31% and is the most commonly seen sexually transmitted infection[10]In a large epidemiology study conducted in India, it was shown that HPV types 16-18 either alone or together were detected in 76.3% of cervical cancer cases.[11]It has been advocated that a single round of HPV screening can cause a significant reduction in the severity and mortality of the disease.[12] HPV infection can be diagnosed by colposcopy cytology, histopathology, molecular as well as immunocytochemistry methods. This study was conducted to determine the HPV status in cervical intraepithelial lesions in women of reproductive age group attending our hospital. The aims of the study were 1. To assess cytomorphological incidence of various lesions of uterine cervix by Bethesda system2014 in the local population.2. To evaluate various cervical epithelial abnormalities by conventional pap smear cytology 3. To study the biomarker HPV-DNA testing by PCR in case of abnormal cervical findings and its significant as a diagnostic tool. 4 Compare the efficacy of pap smear and HPV-PCR for detection of cervical intra epithelial lesions for early diagnosis.

## MATERIAL AND METHODS:

The case group was selected out of a cohort of women who visited the Department of Obstetrics and Gynaecology, NSCB Medical College, Jabalpur, fulfilling the inclusion criteria of Pap smear showing ASCUS or worse, Persistent inflammatory smears, Unhealthy looking cervix, Persistent discharge per vaginum or Postcoital bleeding which included routine gynaecological examination and Pap testing. All women with abnormal Pap smears were referred to the Colposcopy.140 women participated in the study, After informed consent Pap smear for cytological evaluation was collected. Cervical cell scrapings were collected with a spatula from the ectocervix and endocervix. The spatula was smeared directly onto 2 separate glass

slides which Were fixed immediately with 95% alcohol.Smears were classified by using the Bethesda classification system. All patients with abnormal Pap smears underwent a full Colposcopic assessment using 5% acetic acid. The observed cervical appearance was recorded for each participant. A 5 to 6 inches long stick with cotton swab attached to its one end was put inside the vagina after dilating it with speculum and a 1 to 2ml of cervical secretions around the cervix was collected along with the cotton swab and put it in a VTM (viral transport medium) and send immediately to the I.C.M.R., Jabalpur microbiology laboratory. Molecular detection of HPV. The cervical swab sample in the VTM was subjected to total DNA extraction by using the Q1A and DNA mini kit (GIAGEN) Germany cat No. 51306 according to the manufacture's instructions. Eluted DNA samples were then this was followed by Amplification of HPV 16 and HPV 18 DNA by PCR (Polymerase chain reaction). The diagnosis of HPV 16 and HPV 18 was done using consensus primer of region GP E6/E7 amplifying 457 base pairs (bp) and 322bp products. The PCR kit with platinum Tag DNA polymerase (invitrogen CA USA cat. No. 11615010) was used for the amplification. After the process of amplification, it was followed by the electrophoresis of the product of amplification of HPV 16 and HPV 18 DNA by PCR (polymerase chain reaction), after which gel documentation of the product was done by the Syngene gel documentation system which was followed by visualization under the ultraviolet transilluminator. Histological evaluation of biopsies were prepared and stained with haematoxylin- eosin and analysed .Tissues were classified according to the CIN classification system as either normal cervix (including cases of chronic inflammation), mild dysplasia (CIN I), moderate dysplasia (CIN II), severe dysplasia or carcinoma in situ (CIN III), invasive squamous carcinoma, or adenocarcinoma.

**Statistical Analysis**

Statistical analysis has been performed with the Fisher exact test; P value less than or equal to 0.05 is taken as significant.

**Sample Characteristics**.

A cohort of 140 women aged 24-65 years (mean 44.5) participated in this study. Regarding their age distribution, 20 (14.3%) women were aged 21-30 years, 78 (55.7%) aged 31-40, 27 (19.3% ) aged 41-50, 13 (9.3% ) aged 51-60, 02 (1.4 % ) aged more than 60 years. The age of the patients ranged from 24 to 65 years. The maximum numbers of the patients were in third decade of life, followed by fourth decade. 64.3% of the study group belong to the rural areas and 35.7% are from urban areas. Most common presenting complain in 55.71 % women was white discharge, 17.86 % women had pain in lower abdomen, 13.57 % women had pruritis, 6.43% had itching while bleeding per vagina was seen in 4.29% and in 2.14% women was burning in micturition. 63.6 % of the study group had consummation of marriage after 18years of age while 31.4% were married between 15 to 18 years and 5 % were married before attaining 15 years. Most of the study population were multi parous women as 53% had parity 3 and parity 2 was seen in 45% of study subjects. Smoking was reported in 34.3% women followed by habit of tobacco chewing 31.4% and use of oral contraceptives was seen in about 24.3% and history of STDs was seen in 5% women. Out of total 140 women 82 (58.57%) had unhealthy cervix; 28 (20.0 %) had cervical hypertrophy; 10 (7.14%) had Nabothian cyst, 13 (9.29%) had ectropion; and 7 (5.0%) had ulceration. Unhealthy cervix was seen in 4.29% ASCUS and 3.57% LSIL while cervical ulceration was commonly seen in HSIL

Cytological and histological findings: On cytological evaluation of pap smear 65 % were inflammatory smears,15.8% were normal, 7.9% women showed ASCUS on cytology,5% had LSIL and 4.3% showed HSIL. 17.2 % of cytologically LSIL showed CIN-I on histology and 6.9% showed moderate dysplasia/CIN II on histology while 13.8% of HSIL showed moderate dysplasia and 3.4% showed severe dysplasia/CIN III on histology.

HPV typing. DNA sequences of high-risk HPV types (HRHPV types) were found in 6.7% while 93.3% of women were negative for it.

16.67 % Of squamous intraepithelial lesions were positive for HPV testing .25% HPV DNA positive were CIN –I and 75% cases were CIN II or moderate dysplasia on histopathology report. HPV 16 DNA was detected in 75% of positive HR-HPV women and among them 66.67% were diagnosed with CIN II. HPV 18 DNA was detected in 25% of HR-HPV positive cases and morphology seen was CIN II on histopathology.

**DISCUSSION:**

India accounts for nearly one-third of the global cervical cancer deaths, with women facing a 1.6% cumulative risk of developing cervical cancer and 1.0% cumulative death risk from cervical cancer.[13]

The present study comprised of 140 Pap smear of women send to Department of Pathology who were screened and cases were classified according to Bethesda system of cervical cytology into inflammatory smear, NILM, ASCUS, LSIL and HSIL during period of 17 months from 1st February 2019 to 31st July 2020.

In present study, 55.7% women were from age group 31-40 years and 19.3 % women were from 41-50 years, so in total majority of women 75 % were from the age group 31-50 years i.e reproductive age group. Mean age in study was 44.5 , and range of age was 24-65 years. Various studies have also shown a similar range of patients presenting with cervical lesions. Our study correlates well with the study of Chhabra et al [14] where more than two third of the women were in the reproductive age group .In study by Sharma et al 82% of the patients were in the reproductive age group while age of the patients ranged from 21 to 70 years of age with a mean of 40.06 years and maximum patients with cervical lesions presented in the age group of 21-50 years. [15] It also collaborates the fact that sexually active women in the reproductive age group have a higher chance of having an unhealthy cervix. Most women in our study belonged to rural communities (64.3%) versus urban areas (35.7%) as ours is a tertiary care hospital catering to the rural areas of Central India, so women visit the hospital only when symptomatic. The result of the study correlates with study by Sachan et al.[16]

The situation of cervical cancer prevalence is alarming in rural population of India where the majorities of women are illiterate, socio-economically weak, have poor hygienic conditions and many other risk factors such as early age marriage and multiple pregnancy also medical facilities, advice and awareness programmes are almost non-existent, all these factors that contribute to the development of cervical lesions which with time progress to cancer cervix.

High parity is also an established risk factor for cervical cancer. In our study cervical intraepithelial lesions ASCUS, LSIL and HSIL were seen in multiparous women. Similarly, studies conducted by Mulazim Hussain Bukhari[17] and Sharma et al[15] show that precancerous lesions were most commonly observed with multipara women. The most common presenting symptom in our study was white discharge per vaginum in 78 cases (55.71%) This correlated well with similar studies.[16,18,19.]

In our study the common per speculum finding was unhealthy cervix in 82 (58.57 %). Most commonly seen cervical lesion in ASCUS (4.29%) and LSIL (3.57%) was unhealthy cervix while in HSIL (2.86%) it was ulceration. In study by Sharma et al[15] the common per speculum finding was hypertrophied uterine cervix in 41% of the cases which on cytology 26% of these cases were of NILM, 10% were those of LSIL, 02% HSIL.

In present study, inflammatory smears accounted for maximum number of (65%) cases observed in the age group of 31-40 years. Similarly in the study of Musmar et al;[20] inflammatory reactive smears were found to be commonest with frequency of 57.2%, whereas in the study of Pradhan B et al[18] number of inflammatory smears were 30%. In a study conducted by Mulazim Hussain Bukhari et al the maximum number of inflammatory smears accounted for 38.3% which were observed in the age group of 30-39 years [17]

The fact that Cervical Intraepithelial Neoplasia is continuous process which begins in its morphologically identifiable stage as LSIL and ends in invasive cancer. The present observation has been supported by the various studies there is sequential progression in the development of precancerous lesions like LSIL and HSIL to squamous cell carcinoma with increasing age.

In present study the maximum number of patients presenting with LSIL were also in the age group of 31-40 years and 51-60 years. The result of our study correlates well with Pradhan B et al [18] who reported the mean age of LSIL as 31-40 and accounted for 31%, and Chhabra et al ,[14] had reported mean age of LSIL as 34.6 years.

HSIL is a cytological category that encompasses severe dysplasia and in situ squamous cell carcinoma, with potentially different outcome. Most of the cases high grade intraepithelial lesions in the present study were reported in the age group of 31-40 years and HSIL was observed in 4.3 % of the cases.

**Table 7 : Comparision Of Epithelial Cell Abnormalities With Other Studies**

| Author | LSIL (%) | HSIL (%) | ASCUS (%) | SCC (%) |
|---|---|---|---|---|
| Gupta et al[21] | 1.36 | 0.91 | 0.52 | 0.28 |
| Kothari et al[22] | 0.83 | 0.31 | 0.11 | 0.05 |
| Nair et al[23] | 1.58 | 0.49 | 0.15 | 0.2 |
| Bal et al[24] | 2.7 | 0.7 | 0.3 | 1.3 |
| Padmini et al[25] | 5.0 | 3.0 | 8.0 | 01 |
| Majumdar et al[26] | 6.7 | 5.2 | 3.8 | 2.3 |
| Manjari et al[27] | 06 | 04 | 06 | - |
| Sarma et al[28] | 3.53 | 3.53 | 1.32 | 3.53 |
| Patel et al[29] | 01 | 01 | 4.12 | 07 |
| Present study | 5 | 4.3 | 7.9 | - |

In our study, the ASCUS was found in 7.9% of screened women, LSIL in 5 %, and HSIL in 4.3 %, results comparable to those in a study done by Padmini et al [25] also reported ASCUS (8%), LSIL (5%), and HSIL (3%) in women screened with the Pap smear test. Higher numbers of LSIL (20%) and HSIL (4%) lesions were found in a study by Padmini CP.[25] while in studies by Bal MS[24] and Sarma et al [28] abnormal cytology was detected less than ours Table No 7.

The LSIL which is 5% is comparable to other previous studies and shows some similarity with Padmini et al,[25] Manjari et al[27] and Majumdar et al [26].

The present study has HSIL cases 4.3% which shows similarity with previous studies like Manjari et al[27] which also were 04% HSIL positive out of 100 cases , Sarma et al[28] 3.53% HSIL positive and Majumdar et al 5.2%[26] HSIL positive cases.

The high prevalence of cytological abnormality observed in Indian studies might be due to cultural differences, age of the individuals, incidence of related infections, selection of cases, awareness about screening, and the presence or absence of cervical screening programs and medical resources available in different parts of the country.

In our study Erosive cervicitis (41.4%) was the most common histopathological finding, followed by mild dysplasia CIN-I (34.5%) and moderate dysplasia in 20.7% cases .17.2 % of cytologically LSIL showed CIN-I on histology and 6.9% showed moderate dysplasia/CIN II on histology.13.8% of HSIL showed moderate dysplasia and 3.4% showed severe dysplasia/CIN III on histology. There is good correlation between cytology and histopathology.

HPV DNA testing showed only 6.7 % positivity. 16.67 % Of squamous intraepithelial lesions were positive for HPV. 10% of HPV positive population falls in the age group 21 to 30 years and 5.56% in age group 31-40 year and 12.5% in age group 41-50.

In the study HPV infection is seen among 10% of rural women. Women with marriage at an early age (less than 15 years) had an HPV positivity of 14.3 % while the prevalence was found to be 12.5 % in the age group of 15-18 years. Women with marriage at an early age had a higher prevalence of HPV infection. Among 4 HPV positive cases 50% had features of LSIL on cytology and 50% had cytological features of HSIL.In this study, the most prevalent HPV genotype was found to be HPV type 16. Das et al has showed that in India, the association of the infection of high-risk HPVs with the age of marriage below 18 years has been found to increase the risk of cervical cancer by 22 fold.[30]In a study conducted by Dutta S et al showed that the risk of HPV infection was higher in women aged 25 to 34 years (odds ratio, 1.11), in married women below 20 years of age (odds ratio, 1.80), and in women with parity ≥4 (odds ratio, 1.04).[31]In a study in the rural community setting of North India, all the married women aged 30-59 years were targeted for screening by care HPV, Pap test and VIA, the sensitivity for detection of CIN was higher with HPV followed by Pap and VIA, respectively. A study carried out in Western Maharashtra showed overall prevalence of high risk HPV was 37.6 per cent with inflammatory lesions and grade I CIN, 65.3 per cent in grade II, 80.6 per cent in grade III and 86.5 per cent in cervical cancer cases. The HPV genotype data showed higher prevalence of HPV-16/18 in cancer specimens indicating that prophylactic 16/18 vaccination would have a significant impact on the prevention of carcinoma cervix in India.[32]

Similar study cervical cytology and HPV-DNA testing conducted in the women of urban and peri-urban areas of Telangana and Andhra Pradesh found HPV prevalence of 14.7 % and 1.8 per cent were high-risk types and all these had abnormal Pap smear on cytology.[33]

Similarly ,in women of Kaniyambadi block of Vellore district in south India , HPV samples showed high-risk HPV was found in 5.9 per cent and low- risk types in 2.7 per cent of women examined.[34]

The results of this study are in agreement with those of Sowjanya et al.[35] and Matah M et al who have reported that the most prevalent HPV types found were HPV 16.[27]

The limitation of the study is that being a hospital-based study, the women enrolled visited the hospital with varied ailments and thus were not true representations of the community. In addition, the prevalence of high risk HPV, other than HPV 16 AND 18 was not evaluated.

Although the sample size of the study was relatively small, we have generated a preliminary set of data that can be used to inform detailed cost-effectiveness evaluation of primary HPV testing , co-testing, HPV testing with genotyping and cytology triage after HPV positive testing .Cancer cervix screening practices are inconsistent in India. Use of Pap smear, as a sole indicator for screening has limitations. The cytological interpretation becomes inappropriate if the smear is inflammatory, a situation very frequently encountered among women from the lower socioeconomic background. In a scenario of infrequent screening, screening with a test of high sensitivity provides greater reassurance, that potential disease has not been missed in women who screened negative.It is an irony that those with high prevalence cannot afford HPV screening by molecular screening while those who can afford require it the least, owing to the low prevalence. Identification of population at risk will enable focused screening, with a greater cost-effective utilization of resources.Screening preferentially should be directed to the target population for the optimal utilization of resources.

## CONCLUSION

Cervical cancer is a preventable disease. The rationale of cervical cancer screening is to identify and treat cervical intraepithelial neoplasia in order to prevent progression to invasive cancer. In the present study, we found that pap smear is a good and effective method for screening the pre-invasive cervical lesions of cervical cancer. High risk HPV DNA screening appears to be a valid option in mass cervical screening programmes as it reduces false-negative results. The purpose of triage is to know who needs further follow up by colposcopy and biopsy to detect pre-cancerous lesion. We recommend awareness programs through Pap smear screening camps, female health fairs, linking ADHAAR number and sending educational messages for awareness, motivation and better follow up. In India, secondary prevention assumes vital importance in the context of the hurdles in implementing primary prevention methods. Women with an abnormal cervical finding on Pap smear should have additional tests: HPV DNA testing and Colposcopic guided biopsy wherever possible.

**Table No. – 1 Relationship Between Age Of Patients And Cervical Cytology**

| Age of patient | Inflammatory Smear | NILM | ASCUS | LSIL | HSIL | Insufficient Smear | Total |
|---|---|---|---|---|---|---|---|
| 21-30 year | 16 (11.4%) | 02 (1.4%) | 01 (6.7%) | 0 | 0 | 01 (6.7%) | 20 (14.3%) |
| 31-40 year | 47 (33.6%) | 13 (9.3%) | 09 (6.4%) | 03 (2.1%) | 05 (3.6%) | 01 (0.7%) | 78 (55.7%) |
| 41-50 year | 25 (17.9%) | 05 (3.6%) | 01 (0.7%) | 00 | 01 (0.7%) | 01 (0.7%) | 27 (19.3%) |
| 51-60 year | 18 (12.9%) | 02 (1.4%) | 0 | 03 (2.1%) | 0 | 0 | 13 (9.3%) |
| More than 60 years | 01 (0.7%) | 0 | 0 | 01 (0.7%) | 0 | 0 | 02 (1.4%) |
| Total | 91 (65. %) | 22 (15.8%) | 11 (7.9%) | 07 (5%) | 06 (4.3%) | 03 (2.1%) | 140 (100%) |

**Table No 2 Relationship Between Chief Complaints And Cervical Findings**

| Chief Complains | No. of Cases | Percentage |
|---|---|---|
| White Discharge | 78 | 55.71 |
| Pain In Lower Abdomen | 25 | 17.86 |
| Pruritis | 19 | 13.57 |
| Itching | 9 | 6.43 |
| Bleeding PV | 6 | 4.29 |

| | | |
|---|---|---|
| Burning Micturition | 3 | 2.14 |

**Table No – 3 Relationship Between Cytological Smear Findings And Histopathological Findings**

| Cytological Findings | Histopathological Findings | | | | |
|---|---|---|---|---|---|
| | Erosive Cervicitis | Mild Dysplasia CIN-I | Moderate Dysplasia CIN-II | Severe Dysplasia CIN-III | Total |
| Inflammatory Smear | 06 (20.7%) | 01 (3.4%) | 00 (0%) | 00 (0%) | 07 (24.1%) |
| NILM | 05 (17.2%) | 02 (6.5%) | 00 (0%) | 00 (0%) | 07 (24.1%) |
| ASCUS | 01 (3.4%) | 01 (3.4%) | 00 (0%) | 00 (0%) | 02 (6.9%) |
| LSIL | 00 (0%) | 05 (17.2%) | 02 (6.9%) | 00 (0%) | 07 (24.1%) |
| HSIL | 00 (0%) | 01 (3.4%) | 04 (13.8%) | 01 (3.4%) | 06 (20.7%) |
| Total | 12 (41.4%) | 10 (34.5%) | 06 (20.7%) | 01 (3.4%) | 29 (100%) |

**Table No 4 Frequency of HPV-DNA Positive Reports.**

| HPV-DNA Testing | Frequency | Percentage |
|---|---|---|
| Positive | 04 | 6.7% |
| Negative | 56 | 93.3% |

**Table No – 5 Relationship Between Cytopathology Findings And Hpv Testing Report**

| Cytopathology | Total No. Of Cases (N = 60) | Percentage | No. Of Hpv Positive Cases (N = 4) | Percentage |
|---|---|---|---|---|
| Inflammatory Smear | 31 | 51.67 | 0 | 0 |
| NILM | 2 | 3.33 | 0 | 0 |
| ASCUS | 11 | 18.33 | 0 | 0 |
| LSIL | 7 | 11.67 | 2 | 50 |
| HSIL | 6 | 10.00 | 2 | 50 |
| Inadequate | 3 | 5.00 | 0 | 0 |
| Total | 60 | 100.00 | 4 | 100.00 |

**Table No. – 6 Relationship Between Hpv-dna Reports And Histopathological Findings**

| Histopathology | Total No. of Cases (N = 29) | Percentage | No. of HPV Positive Cases (N = 4) | Percentage |
|---|---|---|---|---|
| Erosive Cervicitis | 13 | 44.83 | 0 | 0 |
| Mild Dysplasia CIN-I | 10 | 34.48 | 1 | 25 |
| Moderate Dysplasia CIN-2 | 5 | 17.24 | 3 | 75 |
| Severe Dysplasia CIN-3 | 1 | 3.45 | 0 | 0 |
| Total | 29 | 100.00 | 4 | 100.00 |

**Abbrevations :**

- CIN - Cervical Intraepithelial Neoplasia
- LSIL - Low Grade Squamous Intraepithelial Lesion
- HSIL - High Grade Squamous Intra- Epithelial Lesion
- HPV - Human Papilloma Virus
- HRHPV-High risk Human papilloma virus
- NILM-Negative for intraepithelial neoplasia
- ASCUS-atypical squamous cell carcinoma.
- VIA-Visual inspection of cervix with acetic acid .

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