



## COMPARATIVE EVALUATION OF COLPOSCOPY WITH CYTOLOGY FOR DIAGNOSIS OF BENIGN AND MALIGNANT CERVICAL LESIONS

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### ABSTRACT

**Background:** The cytological examination serves as a fundamental screening modality for cervical intraepithelial neoplasia, owing to its cost-effectiveness, ease of accessibility. While colposcopy is limited by cost, accessibility, invasiveness and low specificity. Colposcopy and cytology were considered as competing methods to detect cervical neoplasm. The study evaluates the accuracy of colposcopy for diagnosis of cervical cancer.

**Result:** Total 27 cases of CIN I of which 7 (50%) were positive on colposcopy, 6 (42.86%) were benign lesions colposcopically and 1 (7.14%) was CIN II. For CIN II cytology had detected 6 cases as CIN II of which 5 (83.33%) was positive for CIN II colposcopically and only 1 (16.67%) was diagnosed as CIN I on colposcopy. For CIN III out of 3 cytology positive cases for CIN III, 2 (66.67%) were colposcopically diagnosed as CIN III.  $\chi^2$  test has been applied which was found statistically significant.

**Conclusion:** The sensitivity and specificity of colposcopy was much higher as compared to cytology, specifically increasing for high grade cervical lesions.

### INTRODUCTION

Cervix cancer ranks as the second most prevalent cancer in the developed countries and the frequent in the developing countries. According to the data from GLOBOCAN 2002, cervical cancer is identified as the most prevalent form of cancer among women in Indian.<sup>[1]</sup> In India, cervical cancer results in death of one woman in every seven minutes, accounting to approximately 200 fatalities per day.<sup>[1]</sup> With the recent advancement in understanding the etiology of cervical cancer in its preinvasive states, the integration of health education initiatives, early detection protocols, appropriate management strategies, and the availability of standard therapeutic interventions has

contributed a reduction in mortality in many developed countries.<sup>[2]</sup> The PAP **smear serves as a fundamental screening modality** for cervical intraepithelial neoplasia, owing to its cost-effectiveness, ease of accessibility, and absence of any special setup.<sup>[3]</sup> While studied for primary screening, colposcopy is limited by cost, accessibility, invasiveness and low specificity. **Histology, a gold standard method confirms** colposcopy's sensitivity, supporting its diagnostic role.<sup>[4]</sup> Colposcopy and cytology were considered as competing methods to detect cervical neoplasm. Thus we, undertaken this study to evaluate the accuracy of colposcopy for diagnosis of cervical cancer.

**AIMS AND OBJECTIVE:** To evaluation of colposcopy with cytology for diagnosis of benign and malignant cervical Lesions.

## MATERIAL AND METHOD

The present study was conducted in the Department of Obstetrics and Gynaecology, Amaltas Institute of Medical Sciences, Dewas, M.P India from August 2006 to July 2008. The study design is a prospective analytical carried out in 75 clinically diagnosed patients of cervical cancers. It includes colposcopy and cytology of uterine cervix. The inclusion criteria are abnormal appearance of cervix, abnormal PAP smear, persistent undiagnosed vaginal discharge, menstrual abnormalities e.g. post menopausal bleeding, intermenstrual bleeding and post coital bleeding, asymptomatic cases with routine PAP smear, high risk patients for cancer cervix, and sexually transmitted diseases. Pregnant patients were excluded from the study.

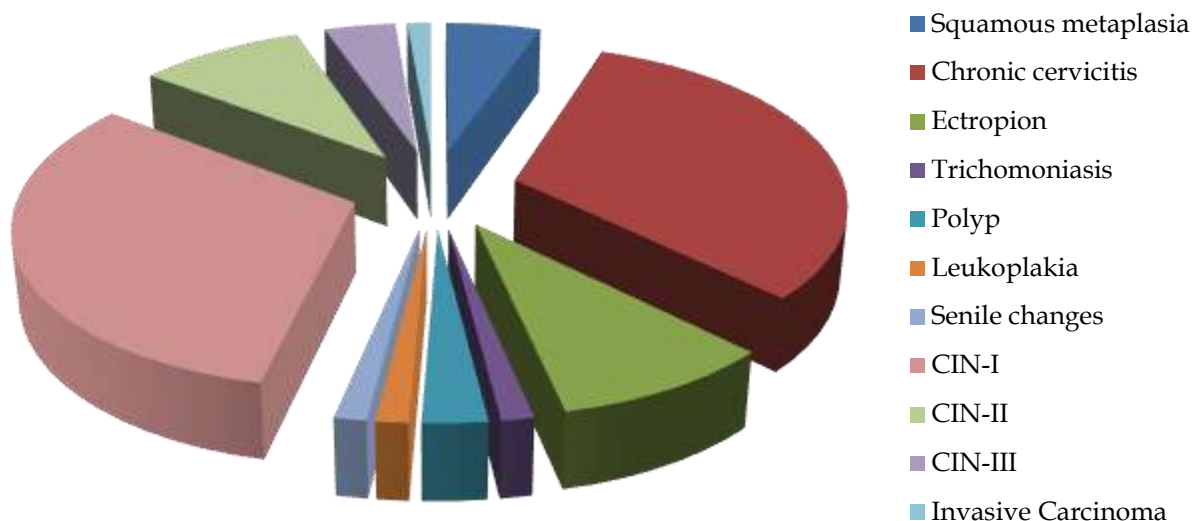
After relevant history taking and clinical examination, the procedure was explained to patients and informed consent was obtained. Patient was subjected to colposcopic examination in a separate room setup for colposcopy.<sup>[5]</sup> Papanicolaou smear is taken. Cervix is cleaned with normal saline and examined with naked eye. The cervix is examine through colposcope, first in low power and then under higher magnifications. Finally green filter is used to identify the vascular pattern. A colposcopic guided biopsy is taken from suspicious areas and sent for histopathological examinations. Colposcopic findings are documented and explained to the patient in post procedure counseling.<sup>[6]</sup>

## RESULT

Maximum number (45.33%) of the patients were belongs to age group 30-40 years. The mean of age of the study group is 36 years (SD± 2 year). The most common clinical complaint was discharge PV in 84% of patients either alone or in combination with other symptoms followed by pain in abdomen (40%). The most common per speculum finding in our patient was cervical erosion in 53.33%, discharge PV was seen in 82.67% of cases, either in association with erosion or alone. Out of 75 patients, 25 were colposcopically diagnosed as cervicitis of which 24 (32%) had chronic cervicitis and 1 patient was suffering from trichomoniasis (Table no.1 and Graph no1).

**Table no.1: Distribution of Patients as per Colposcopic Findings**

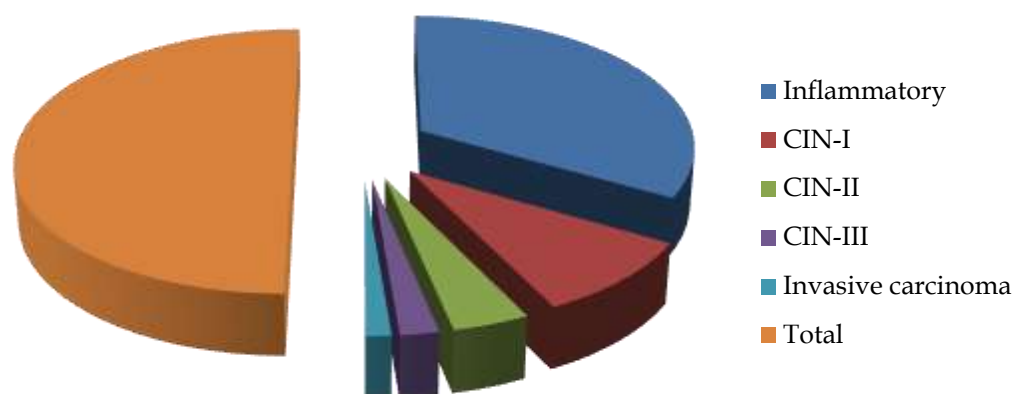
| Diagnosis           | Number of Patients | Percentage |
|---------------------|--------------------|------------|
| Squamous metaplasia | 4                  | 5.33       |
| Chronic cervicitis  | 24                 | 32.00      |
| Ectropion           | 7                  | 9.33       |
| Trichomoniasis      | 1                  | 1.33       |
| Polyp               | 2                  | 2.67       |
| Leukoplakia         | 1                  | 1.33       |
| Senile changes      | 1                  | 1.33       |
| CIN-I               | 24                 | 32.00      |
| CIN-II              | 7                  | 9.33       |
| CIN-III             | 3                  | 4.00       |
| Invasive Carcinoma  | 1                  | 1.33       |
| Total               | 75                 | 100.00     |

**Graph No.1: Distribution of Patients as per Colposcopic Findings**

Inflammatory smear find out on cytology in 66.7% patients while dysplastic smear was present in 30.67% of patients and invasive carcinoma (squamous cell carcinoma) was found in 2.67% of patients on PAP smear screening cytology (Table no.2 and Graph no.2).

**Table No.2: Distribution of Patients as per Cytological Findings**

| Cytological Findings | Number of Patients | Percentage |
|----------------------|--------------------|------------|
| Inflammatory         | 50                 | 66.67      |
| CIN-I                | 14                 | 18.67      |
| CIN-II               | 6                  | 8.00       |
| CIN-III              | 3                  | 4.00       |
| Invasive carcinoma   | 2                  | 2.67       |
| Total                | 75                 | 100.00     |

**Graph No.2: Distribution of Patients as per Cytological Findings**

While comparing the results of cytology to colposcopy for CIN I we found that cytology had detected 27 cases of CIN I of which 7 (50%) were positive on colposcopy, 6 (42.86%) were benign lesions colposcopically and 1 (7.14%) was CIN II. For CIN II cytology had detected 6 cases as CIN II of which 5 (83.33%) was positive for CIN II colposcopically and only 1 (16.67%) was diagnosed as CIN I on colposcopy. For CIN III out of 3 cytology positive cases for CIN III, 2 (66.67%) were colposcopically diagnosed as CIN III.  $\chi^2$  test has been applied which was found statistically significant (Table No.3).

**Table No. 3: Correlation of Cytology to Colposcopic Findings**

| Colposcopy         | Inflammation |        | CIN-1 |        | CIN-2 |        | CIN-3 |        | Invasive Carcinoma |        |
|--------------------|--------------|--------|-------|--------|-------|--------|-------|--------|--------------------|--------|
|                    | No.          | %      | No.   | %      | No.   | %      | No.   | %      | No.                | %      |
| Normal             | 4            | 8.00   | 0     | 0.00   | 0     | 0.00   | 0     | 0.00   | 0                  | 0.00   |
| Benign             | 30           | 60.00  | 6     | 42.86  | 0     | 0.00   | 0     | 0.00   | 0                  | 0.00   |
| CIN-1              | 16           | 32.00  | 7     | 50.00  | 1     | 16.67  | 0     | 0.00   | 0                  | 0.00   |
| CIN-2              | 0            | 0.00   | 1     | 7.14   | 5     | 83.33  | 1     | 33.33  | 0                  | 0.00   |
| CIN-3              | 0            | 0.00   | 0     | 0.00   | 0     | 0.00   | 2     | 66.67  | 1                  | 50.00  |
| Invasive Carcinoma | 0            | 0.00   | 0     | 0.00   | 0     | 0.00   | 0     | 0.00   | 1                  | 50.00  |
| Total              | 50           | 100.00 | 14    | 100.00 | 6     | 100.00 | 3     | 100.00 | 2                  | 100.00 |

**Chi-square value = 171.37 for 20 df. with probability of 0.000 – Highly significant.**

Colposcopy is highly sensitive and specific for high grade lesions (CIN II and CIN III) (Table no.4).

**Table No. 4: Comparison of Sensitivity and Specificity**

|                    | Colposcopy | PAP smear |
|--------------------|------------|-----------|
| <b>Sensitivity</b> |            |           |
| ❖ CIN I            | 66.6%      | 42.86%    |
| ❖ CIN II           | 85.7%      | 66.66%    |
| ❖ CIN III          | 100.00%    | 66.66%    |
| <b>Specificity</b> |            |           |
| ❖ CIN I            | 98%        | 85.25%    |
| ❖ CIN II           | 100%       | 97.10%    |
| ❖ CIN III          | 100%       | 97.20%    |

## DISCUSSION

The cytological examination is a more specific tool but has less sensitivity. Its specificity is greater for high grade lesions. In a meta-analysis study Abulafia O et al (2003)<sup>[7]</sup> comparing performance of thin prep liquid based cytology screening with conventional cytology, screening found sensitivity of conventional cytology relative to histology was 68% and specificity was 79%. In a retrospective study by Souther WP et al (2006)<sup>[8]</sup> on 2244 women on role of colposcopy in follow-up of women treated for cervical intra-epithelial neoplasia, colposcopy improved sensitivity of PAP smear for high grade CIN from 64 to 91% but reduced specificity from 95-88%. In another study by Shankaranarayan in Kolkata (2003)<sup>[9]</sup> on role of VIA and cytology in detection of CIN, he found sensitivity of cytology was 29.5% and specificity was 92.3%. According to Mayeaux EJ (Louisiana) 1995<sup>[10]</sup>, we should be especially concerned, if biopsy reports are significantly less than PAP smear reports. In general, a difference of one grade is common and acceptable.

## CONCLUSION

We concluded that the sensitivity and specificity of colposcopy was much higher as compared to cytology, specifically increasing for high grade cervical lesions.

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