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## Original Article

# Colposcopy Findings of VIA Positive Cases in Detection of Precancerous Lesion of Cervix

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***ABSTRACT***

***Introduction:*** *Cervical cancer is still the second-most frequent malignancy in women overall. According to an epidemiological study conducted by Bangladesh's Cancer Research Institute, 26% of all females with cancer in this country have cervicovaginal carcinoma. The World Health Organization views cervical cancer as a condition that can be avoided. It can be identified in its precancerous phage, which is why. Colposcopy is a diagnostic procedure for determining the presence of preclinical invasive carcinoma and cervical intraepithelial neoplasia (CIN).* ***Methods and materials:*** *A hospital-based observational study was carried out in the Department of Obstetrics & Gynaecology, Comilla Medical College and Hospital from 1st July 2015 to 31st December 2015. Two hundred women who fulfil the selection criteria were included in this study. History and physical examination were recorded. Colposcopy and biopsy were done on all patients after proper counselling, results were tabulated and analysed.* ***Results:*** *All of the 200 cases had undergone colposcopy examination. Among them, 30% showed no abnormality. In 70% lesion was found. All the study subjects were sampled by colposcopy-guided biopsy. The biopsy results showed 8.5% CIN I, 3.5% CIN II, 1.5% CIN III, 1.5% invasive carcinoma and 41.5% chronic inflammatory lesion).* ***Conclusion:*** *This study's findings support the notion that colposcopy and VIA provide pretty satisfactory diagnostic accuracy in the evaluation of cervical pre-malignant conditions. VIA is a method that is suitable for usage in low-resource situations due to several factors.*

***Keywords:*** *Cervical cancer, Cervical intraepithelial neoplasia (CIN), Colposcopy*

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## INTRODUCTION

The concept of cervical cancer precursors dates back to the late nineteenth century, when areas of non-invasive atypical epithelial changes were recognized in tissue specimens adjacent to invasive cancers [1]. The term carcinoma in situ (CIS) was introduced in 1932 to denote those lesions in which the undifferentiated carcinomatous cells involved the full thickness of the epithelium, without disruption of the basement membrane [2]. The term cervical intraepithelial neoplasia (CIN) was introduced in 1968 by Richart and divided into grades I, II and III. The severity of the condition is denoted by the involvement of the thickness of the cervical epithelium [3]. CIN was divided into grades I, II and III. Severity of the condition is denoted by involvement of the thickness of cervical epithelium. In CINI there is good maturation with minimal nuclear abnormalities and few mitotic figures. Undifferentiated cells are confined to the deeper Layers (Lower third) of the epithelium. Mitotic figures are present, but not very numerous. CIN II is characterized by dysphasic cellular changes mostly restricted to the lower half or the lower two thirds of the epithelium, with more marked nuclear abnormalities than in CIN I. Mitotic figures may be seen throughout the lower half of the epithelium. In CIN III, differentiation and stratification may be totally absent or present only in the superficial quarter of the epithelium with numerous mitotic figures. Nuclear abnormalities extend throughout the thickness of the epithelium. Many mitotic figures have abnormal forms [4]. Preinvasive stages are typically present before invasive cervical cancers. Microscopically, this is represented as a spectrum of occurrences that develop from cellular atypia through different grades of cervical intraepithelial neoplasia (CIN) or dysplasia before progressing to invasive cancer. According to the World Health Organization (WHO), cervical cancer is a preventable disease. This is because it is detectable in the precancerous stage [5]. To describe lesions in which undifferentiated carcinomatous cells spread across the entire thickness of the epithelium without rupturing the basement membrane, the term carcinoma in situ (CIS) was first used in 1932 [6]. It was subsequently reported that CIS and invasive cervical cancer are related. The cervical epithelial atypia that is in the middle of the normal epithelium and CIS was given the name dysplasia in the late 1950s [7]. To aid in the diagnosis of cervical neoplasia, a colposcopy is a low power, stereoscopic binocular field microscope with a strong high source used for magnified visual inspection of the uterine cervix. The intention of the study was to identify the colposcopy findings in VIA-positive cases.

## OBJECTIVES

**General objective:**

- To evaluate the colposcopy findings in VIA positive cases.

**Specific objectives:**

- To perform colposcopy examination in VIA positive cases.
- To do histopathological analysis of Colposcopically directed biopsy.
- To compare and correlate the Colposcopy findings and histopathology reports.
- To critically evaluate the sensitivity and specificity of Colposcopy in the early detection of dysplasia.

## METHODS & MATERIALS

A cross-sectional study was carried out in Colposcopy center, Comilla Medical College Hospital. from July 2015 to December 2015. A total of 200 patients (N=200) were enrolled in this study following the inclusive criteria. This study will be conducted in colposcopy centre of the Department of Obstetrics & Gynaecology at Comilla Medical College and Hospital in six-month period after acceptance of protocol. It will be a

prospective clinical study conducted in women who fulfill the selection criteria. Written consent was taken before recruiting the study population. This study will be done with kind assistance of all senior experts who have colposcopy training. After collection, data will be analyzed in SPSS program after meticulous checking and rechecking. Appropriate table, graphs and statistical test will be prepared. Ethical clearance will be taken from ethical review committee of Comilla Medical College Hospital. The information was kept confidential only to be used for the study purpose.

**Operational definitions:**

Cervical intraepithelial neoplasia (CIN): Is characterized by the whole range of cellur atypia confined to the cervical epithelium. CIN was divided into grade 1, 2 and 3.

- CIN 1 corresponds to mild dysplasia.
- CIN 2 correspond to moderate dysplasia, mostly restricted to the lower half or the lower two third of the epithelium.
- In CIN 3 differentiation and stratification may totally absent or present only in the superficial quarter of the epithelium with numerous mitotic figures. Nuclear abnormalities extend throughout the thickness of the epithelium.

**Inclusion criteria:**

- Age 20 to 60 years.
- All the women who are VIA positive.
- VIA positive cases who are interested to participate in this study.

**Exclusion criteria:**

- Women with cervical growth.
- Pregnant women.

**Data analysis:**

The study coordinators performed random checks to verify data collection processes. Completed data forms were reviewed, edited, and processed for computer data entry. Frequencies, percentages, cross-tabulations were used for descriptive analysis. The data analysis was performed using Statistical Package for the Social Sciences (SPSS) Version 25.0. The significance level of 0.05 was considered for all tests.

**RESULTS**

Among 200 women, the majority of the subjects (42%) were from the 30 to 39 years age group, followed by (38%) were from 40-49 years of age. Regarding residence, 75% of the patients belonged to rural areas. Considering education level, 30% of the respondents had no schooling, and 50% had primary level of education. [**Table I**]. Most of the study subjects had complaints of P/V discharge other major complaints were bleeding per vagina which was either postcoital, intermenstrual, or post-menopausal type. Out of them, 51% of women who complained of white discharge had CIN among 5% of patients. 12% had irregular P/V bleeding among them 2% had CIN. Of patients who had no symptoms among them, 1% had CIN.

**Table I: Demographic characteristics of the study subjects (N=200)**

| Age in years | N | % |
|---|---|---|
| **20-29** | 30 | 15.0 |
| **30-39** | 84 | 42.0 |
| **40-49** | 76 | 38.0 |
| **>50** | 10 | 5.0 |
| **Residence** | | |
| **Rural** | 150 | 75.0 |
| **Urban** | 50 | 25.0 |
| **Education level** | | |
| **Illiterate** | 60 | 30.0 |
| **Primary** | 100 | 50.0 |
| **Secondary** | 30 | 15.0 |
| **Higher Secondary And above** | 10 | 5.0 |

***Table II*** Regarding colposcopic impression in study subjects, 10% of the cases were colposcopically normal. Inflammatory changes were found in 20% and CIN III among 2% cases. Colposcopic examination were found unsatisfactory as squamocolumner junction could not be visualized due to bleeding among 31 subjects and biopsies were taken from the upper and lower lip of cervix as the clinical symptoms were very much suspicious. Punctation and mosaic pattern were found in 4% of patients respectively. Erosion cervix were found in 33.5% and polyps were diagnosed in 5% of cases.

**Table II: Distribution of the study population based on Clinical characteristics (N=200)**

| Complaints | (n, %) |
|---|---|
| **No symptom** | 20,10.0% |
| **Vaginal discharge (with itching, without itching, foul smelling & blood-stained)** | 102,51.0% |
| **Irregular P/V bleeding** | 24,12.0% |
| **Post-coital bleeding** | 34,17.0% |
| **Dyspareunia** | 14,7.0% |
| **Post-menopausal bleeding** | 6,3.0% |

[**Table III**]. Among 200 patients, histopathology report of biopsy findings showed, 13.5% patient had CIN, among them CIN-I were 8.5% CIN-II were 3.5%, CIN-III was 1.5%.

**Table III: Colposcopic appearance of cervix (N=200)**

| Appearance | N | % |
|---|---|---|
| **Normal** | 20 | 10.0 |
| **Erosion of cervix** | 67 | 33.5 |
| **Inflammatory change** | 40 | 20.0 |
| **Polyps** | 10 | 5.0 |
| **CIN I** | 24 | 12.0 |
| **CIN II** | 04 | 2.0 |
| **CIN III** | 04 | 2.0 |
| **Unsatisfactory** | 31 | 15.5 |

[**Table IV**]. On colposcopic examination, 20 women were found as normal. Biopsy report of them revealed 13 as normal and 7 as chronic cervicitis. Colposcopically 24 women were found as CIN I, 4 women were found as CINII and 4 as CIN III. Biopsy report of CIN I (colposcopy) patients revealed 4 as normal, 4 as chronic cervicitis and 16 as CIN I, of CIN II (Colposcopy)-1 was found as CIN I, and 3 was found as CIN II and among colposcopically CIN III, 1 found as CIN II, 2 as CIN III and 1 as invasive carcinoma.

**Table IV: Colposcopy directed biopsy findings (N=200)**

| Colposcopy directed biopsy findings | N, % |
|---|---|
| **Chronic cervicitis** | 83,41.5% |
| **Cervical polyp** | 9,4.5% |
| **Histopathologically Normal** | 78,39.0% |
| **CIN - I** | 17,8.5% |
| **CIN – II** | 7,3.5% |
| **CIN – III** | 3,1.5% |
| **Invasive carcinoma** | 3,1.5% |

[**Table V**]. In this study sensitivity of colposcopy was 90% and specificity was 97.58%.

**Table V: Co-relation between colposcopy and biopsy findings (N=200)**

| Colposcopic impression | | Biopsy findings | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Cases** | **Total No. of Patient** | **Normal** | **Polyp** | **Chronic cervicitis** | **CIN I** | **CIN II** | **CIN III** | **Invasive Carcinoma** |
| **Normal** | 20 | 13 | -- | 07 | -- | -- | -- | -- |
| **CIN I** | 24 | 04 | -- | 04 | 16 | -- | -- | -- |
| **CIN II** | 04 | -- | -- | -- | 01 | 03 | -- | -- |
| **CIN III** | 04 | -- | -- | -- | -- | 01 | 02 | 01 |
| **Erosion** | 67 | 31 | -- | 33 | -- | -- | 01 | 02 |
| **Unsatisfactory** | 31 | 21 | -- | 07 | -- | 03 | -- | -- |
| **Inflammatory Changes** | 40 | 09 | -- | 31 | -- | -- | -- | -- |
| **Polyp** | 10 | -- | 09 | 01 | -- | -- | -- | -- |
| **Total** | 200 | 78 | 09 | 83 | 17 | 07 | 03 | 03 |

**Table VI: Sensitivity and specificity of colposcopy (N=200)**

| Colposcopy | Biopsy report | | Total | Sensitivity of Colposcopy | Specificity of Colposcopy |
|---|---|---|---|---|---|
| | **Positive** | **Negative** | | | |
| Positive = 32 | True positive = 27 | False positive = 05 | 32 | 90 % | 97.58 % |
| Negative = 168 | False Negative = 3 | True negative = 165 | 168 | | |
| Total = 200 | 30 | 170 | 200 | | |

## DISCUSSION

In the present study, screening was done in 200 women with abnormal symptoms like excessive white discharge, and post-coital and post-menopausal bleeding who were VIA positive. All of the 200 cases had undergone colposcopy examination and showed no abnormalities in 10% of the cases and a lesion in 90% of cases. All the subjects were sampled by colposcopy-guided biopsy. Regarding age distribution high incidence of CIN was found among the age group of 30-49 years with a mean age of 41 years. Another related article found that the average (SD) age for the total study cohort was 38.7±9.3 years [5]. A related finding carried out in India found that the prevalence of CIN was higher in women over 30 years [8-9]. Low level of education was seen in the study subjects in the present study, which also contributes in developing the disease, due to the ignorance. Wang Z et al. also showed the same scenario [10]. Regarding colposcopic appearance in study subjects, 10% of the cases were colposcopically normal. Inflammatory changes were found in 20% and CIN III among 2% cases. Erosion

cervix were found in 33.5% and polyps were diagnosed in 5% of cases. Among 200 patients, histopathology report of biopsy findings showed, 13.5% patient had CIN, among them CIN-I were 8.5% CIN-II were 3.5%, CIN-III was 1.5%. On colposcopic examination, 20 women were found as normal. Biopsy report of them revealed 13 as normal and 7 as chronic cervicitis. Colposcopically 24 women were found as CIN I, 4 women were found as CIN II and 4 as CIN III. Biopsy report of CIN I (colposcopy) patients revealed 4 as normal, 4 as chronic cervicitis and 16 as CIN I, of CIN II (Colposcopy)-1 was found as CIN I, and 3 was found as CIN II and among colposcopically CIN III, 1 found as CIN II, 2 as CIN III and 1 as invasive carcinoma. One study carried out in Bangladesh showed the incidence of CIN I at 34.56%, CIN II at 13.9% and CIN III at 9.56% and invasive carcinoma at 4.41% which were quite higher than in our study [11]. But in our study rate of inflammation was higher. This discrepancy might be due to differences in the selection criteria of the study subjects, where our study was done on VIA-positive cases. In a study, Olaniyan et al explained the validity of colpocopy in the diagnosis of early cervical cancer and concluded that colposcopy is a valid tool for the diagnosis of CIN. Its integral role in the management of early cervical cancer was justified [12]. Mitchel et al in 1998 did a meta analysis in the role to colposcopy for the diagnosis of CIN and found that average weighed sensitivity of diagnostic with all grade cervical dysplasia was 96% and specificity was 48% [13]. This study showed the excellent correlation of colposcopy with histopathology of guided biopsy. Correlation between colposcopic findings and biopsy showed a good correlation for higher-grade lesions (CIN II and CIN III). Benedict J.L did an analysis on 84244 patients from British columbia by cytology and colposcopy program and found that colposcopy correlated with referred cytology within one degree in over 90% of cases andcytology histology correlation within one degree occurred in 82% [14]. In this study sensitivity of colposcopy was 90% and specificity was 97.58%. A related article showed VIA had a sensitivity of 72-4% and a specificity of 54% and a false negative rate of 15% [15]. However, sensitivity and specificity of colposcopy were 68.5% and 76% respectively in another study [16].

**Limitation of the present study**

According to standard statistical formula, a large sample size should have been taken to reflect the picture of whole population. However, due to shortage of time and resource the sample size had to be confined to 200. Moreover, the applying exclusion criteria the sample size was reduced further.

## CONCLUSIONS

This study concludes that the diagnostic accuracy in the evaluation of cervical pre-malignant conditions with VIA and colposcopy is quite satisfactory. Many aspects of VIA make it an appropriate approach for use in low-resource settings. On the other hand, in colposcopy examination, it is possible to see areas of cellular dysplasia and vascular or tissue abnormalities not visible otherwise and to select areas most propitious for biopsy. Stains and other chemical agents are also used to improve visualization. Colposcopy has reduced the need for doing blind cervical biopsies where the rate of finding abnormalities was low. The experienced colposcopist is also able to find focal cervical lesions, obtain directed biopsies at the most appropriate sites, and make decisions about the most appropriate therapy. Many cases of cervical cancer are preventable through appropriate screening practices. So, WHO recommends and especially emphasizes early detection policies to program with a systemic approach that is well integrated into the existing health system and accounts for the social, cultural and economic context. In

Bangladesh, routine use of VIA and colposcopy in all clinically suspicious cases will play a significant role in the detection of early cervical cancer and can prevent their progression to invasive carcinoma.

## RECOMMENDATIONS

Screening for early detection of cervical cancers must be done. It simply can be done by visualizing the cervix with acetic acid. Doctors, nurses and paramedics of all Thana Health Complexes should be oriented and trained in VIA procedures. All Gynecologists should be trained in VIA procedure and Colposcopy. With proper training in VIA procedure and colposcopy, Gynecologists can gain enormous experiences in this aspect and can take an active role in preventing cervical cancer thereby rendering service to improve women's health status in our country.

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***Ethical approval***: The study was approved by the Institutional Ethics Committee

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