

## Correlation between Colposcopy and Histologic Findings in Cervical Intraepithelial Neoplasia

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Cervical cancer is one of the few highly preventable cancers. The early detection and removal of precancerous cervical lesions effectively abolish the development of invasive cervical cancer. Colposcopy correlated with directed biopsy is described as the reference investigation or 'gold standard' for the diagnosis of cervical precancer. The aim of this study was to assess the sensitivity and specificity of colposcopic examination and cervical punch biopsy, to determine the correlation between these two methods. This cross sectional study was carried out at Dinajpur Medical College, Dinajpur from July 2014 to June 2015 for a period of one year. VIA was performed and colposcopy was done among the VIA positive patients. Histological evaluation also done. A total number of 100 VIA positive patients were evaluated colposcopically and histopathologically. Out of 100 VIA positive cases, colposcopy revealed 3 normal cases and 97 premalignant (CIN I, CIN II, CIN III) or malignant conditions. Among colposcopically positive patients CIN I was 59%; CIN II was 27% and CIN III was 4% and carcinoma cervix was 7%. Sensitivity of colposcopy compared to histopathology was 85.7% and Specificity was 66.67%. We conclude adopting colposcopy to triage VIA-positive women, which obviates the necessity of resource-intensive cytology and also because the performance of cytology is known to be suboptimal outside the centers of excellence or beyond the tertiary care centers in developing countries.

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**Key words:** Colposcopy, histopathology, cervical, intraepithelial, neoplasia

### Introduction

Every year an estimated 13 000 women are diagnosed with cervical cancer and 6600 die from the disease in Bangladesh.<sup>1</sup> Cervical cancer is the second most common gynecologic cancer worldwide, accounting for 13% of all female cancer in developing countries.<sup>2</sup> The important reasons for higher cervical cancer incidence in developing countries are lack of resources, lack of effective screening programs and poorly organized health system aimed for

detecting precancerous condition before they progress to invasive cancer. So, there is a need of low cost approach for effective cervical cancer screening programs.<sup>3</sup> Cervical cancer is a disease that can be prevented through both primary prevention and early detection. So in developed countries the incidence of cervical cancer has decreased due to screening, early detection and treatment. However, in developing countries, 80% of cervical cancers are incurable at the time of detection due to their advanced stage.<sup>4</sup>

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Colposcopy performs better in differentiation of high-grade from low-grade disease than in differentiation of low-grade disease from normal cervix,<sup>5</sup> and correlated with directed biopsy is described as the reference investigation or 'gold standard' for the diagnosis of cervical precancer.<sup>6</sup> The positive predictive rate of the colposcopic impression is better as the cervical lesion is more severe. When directed biopsies are taken, the positive predictive rate of colposcopy increases considerably. For micro-invasive disease, the positive predictive rate is quite poor, probably because of the absence of characteristic features. The choice of whether and where to biopsy is more important than assigning a colposcopic impression. Atypical Lesion Triage Study (ALTS) quality control colposcopists demonstrated only mediocre agreement among them and compared with clinical center colposcopists<sup>7</sup>. The sensitivity of enrollment colposcopy was shown to increase steadily with additional biopsy specimens in another recent ALTS analysis, regardless of any other variable.<sup>8</sup>

The aim of this study was to assess the sensitivity and specificity of colposcopic examination and cervical punch biopsy, to determine the correlation between these two methods

### **Methods**

This cross sectional study was carried out at Dinajpur Medical College, Dinajpur from July 2014 to June 2015 for a period of one year. The study was performed among VIA positive women with a age group between 20 to 60 years who were attended in the Department of Obstetrics and Gynecology of the tertiary level hospitals. Patients who were given their informed consent were included. Purposive sampling was done. All pregnant women, menopausal lady and women with frank growth of cervix with active vaginal bleeding were excluded from study. Complete

histories of patient pertaining to complaints, any white discharge per vagina, post coital bleeding, obstetric and menstrual history were obtained. Informed written consent was taken. Detailed clinical data were obtained and noted on structured proforma. Per speculum examination of cervix was done.

Squamo-columnar junction was visualized. A solution of 5% acetic acid was applied to cervix using a cotton swab. The cervix was then examined for 1-2 minutes under an adequate light source. The detection of any distinct acetowhite area was considered positive result. If no acetowhite areas were recorded, or if a whitish appearance was doubtful, the test result was considered negative. Those positive on VIA were invited for colposcopy.

Normal saline was used initially to clean the surface and then vascular lesions and surface lesions were assessed. Abnormal vessels were examined with the aid of green filter. Five percent acetic acid was then applied to mucosal epithelium and it caused disappearance of cervical mucus. If any acetowhite lesions were noted, their intensity, speed of appearance, and disappearance were noted. On colposcopy, findings such as dense acetowhite epithelium, sharply bordered acetowhite epithelium, dilated caliber, irregular-shaped or coiled vessels, coarse punctuation, mosaic appearance, atypical vessels, and irregular surface contour indicate dysplastic epithelium or imminent cancer.

### *Histological evaluation*

Four sections of biopsies were prepared. One of them was stained with hematoxylin-eosin and analyzed by a single pathologist. 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, invasive squamous

carcinoma. The pathologist had no clinical information or results of cytology, colposcopy or HPV testing.

A structured questionnaire was designed including all the variables of interest. It was finalized following pretesting and necessary modifications.

Data were collected through direct interview of the patients at the respective departments by the researcher. Collected data was checked and edited first. Then they were processed with the help of software SPSS (Statistical Package for Social Sciences) version 16 and analyzed. The test statistics used to analysis the data were descriptive statistics,

## Results

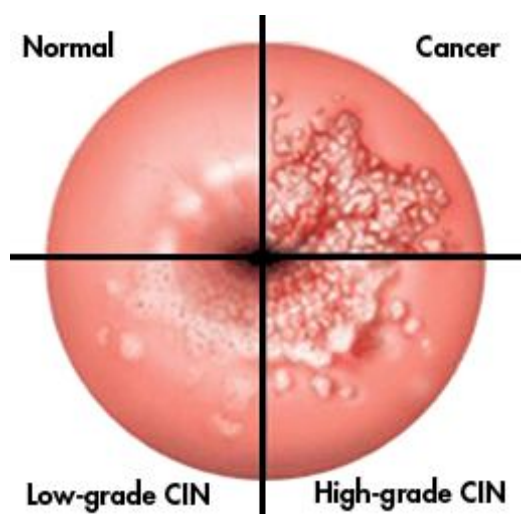


Figure 1: Different types of cervical lesion as seen in colposcopy

The study subjects were married women with an age range of 20 to 60 years. The maximum number of patients was in the age group of 31-40 years (45%, Table I). Mean age of the study subjects were  $37.57 \pm 9.41$  years. Mean age of marriage of the subjects were

$16.33 \pm 3.35$  years (range 10-30 years) and mean age of delivery was  $19.24 \pm 3.91$  years (range 13-38 years). Most subjects were 3-4 gravida (46%) and 0-2 para (48%, Table II). Out of 100 VIA positive cases, colposcopy revealed 3 normal cases and 97 premalignant (CIN I, CIN II, CIN III) or malignant conditions. Among colposcopically positive patients CIN I was 59%; CIN II was 27% and CIN III was 4% and carcinoma cervix was 7% (Table III). Sensitivity of colposcopy compared to histopathology was 85.7% and Specificity was 66.67%

Table I: Age distribution of the study subjects

Age Group	Frequency
20-30 Years	24
31-40 Years	45
41-50 Years	22
51-60 Years	9
Total	100

Table II: Distribution of the study subjects according to para and gravida

Number	Frequency of Gravida	Frequency of Para
0-2	37	48
3-4	46	42
5 or more	17	10
Total	100	100

Table III: Colposcopic findings of the study subjects

Colposcopy	Frequency
Normal	3
CIN I	59
CIN II	27
CIN III	4
Carcinoma Cervix	7
Total	100

Table IV: shows the correlation between colposcopic findings and histological diagnosis.

Count		Histopathologic_Finding						Total
		CIN I	CIN II	CIN III	Carcinoma Cervix	Squamous Metaplasia	Chronic Cervicitis	
Colposcopic Finding	Normal	1	0	0	0	0	2	3
	CIN I	24	1	0	0	5	29	59
	CIN II	8	5	2	0	0	12	27
	CIN III	1	0	1	1	0	1	4
	Carcinoma Cervix	1	0	0	4	0	2	7
Total		35	6	3	5	5	46	100

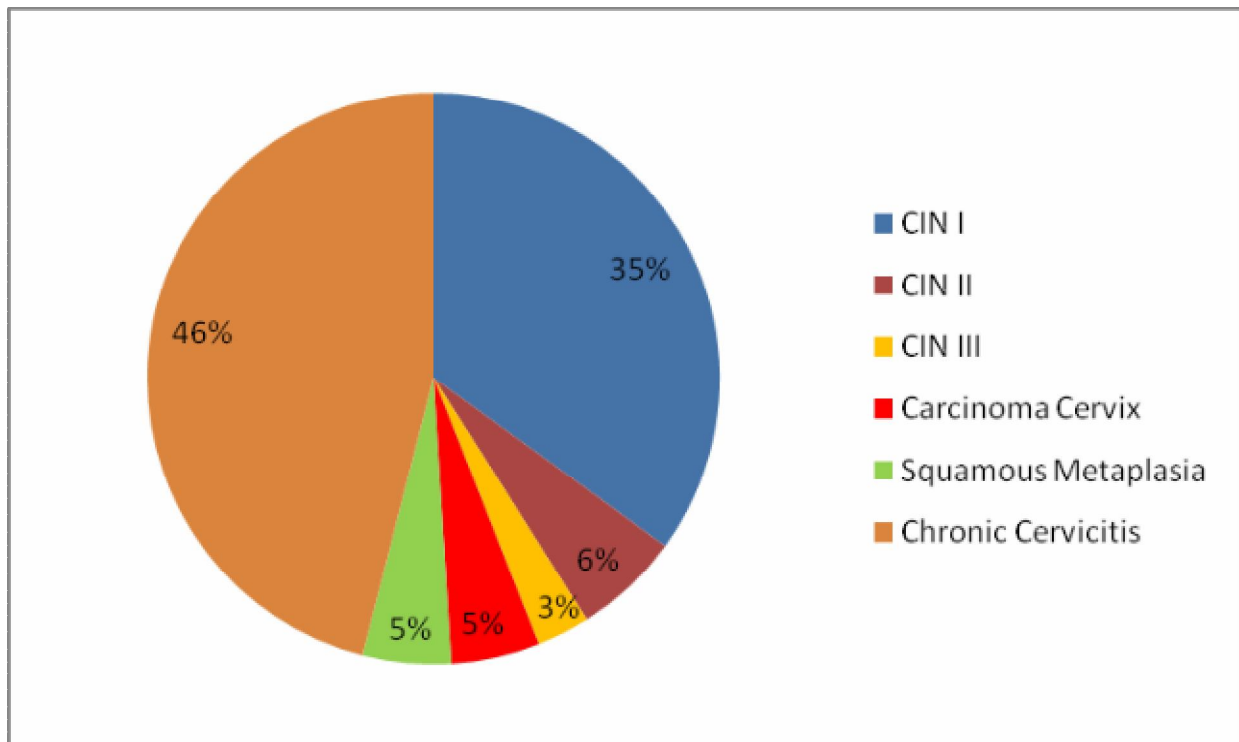


Figure 2. Pie chart showing histopathological findings of study subjects

## Discussion

In this study, out of 100 via positive cases, colposcopy revealed 3 normal cases and 97 premalignant (CIN I, CIN II, CIN III) or malignant conditions. Among colposcopically positive patients CIN I was 59%; CIN II was 27% and CIN III was 4% and carcinoma cervix was 7%. Sensitivity of colposcopy compared to histopathology was 85.7% and Specificity was 66.67%

The performance and accuracy of colposcopy depends largely on the training, experience, and skills of the colposcopist. Hence, sensitivity and specificity of colposcopy varies widely among studies in different parts of the world.

In a meta-analysis, Mitchell and colleagues report studies that distinguished normal cervix from all other diagnosis, for which the individual estimations of sensitivity of diagnostic colposcopy (87-99%) were high, whereas those of specificity (23-87%) were lower. Similarly, among 8 other studies with fully separated disease categories, for distinguishing normal cervix, atypia, and LGSIL from HGSIL and cancer, the estimates of sensitivity of diagnostic colposcopy ranged from 64% to 99% and the specificity from 30% to 93%.<sup>9</sup> Also data from Massad and Collins reported that the sensitivity of colposcopy with a threshold of any lesion detected was 89% but fell to 56% when the threshold was raised to a high-grade result.<sup>10</sup>

The above comparable estimates have an important implication in adopting colposcopy to triage VIA-positive women, which obviates the necessity of resource-intensive cytology and also because the performance of cytology is known to be suboptimal outside the centers of excellence or beyond the tertiary care centers in less developed countries.

The present study, however, suffers from the

limitation of colposcopy being performed by multiple colposcopists at various levels of expertise, many of them recently trained, presumably in their learning curves during the entire phase of the study.

Thus in spite of the above limitations, our findings suggest that colposcopy shows acceptable sensitivity for a histologic outcome. Thus colposcopy, which gives immediate results, can be considered as a secondary testing tool to triage women found positive on VIA in settings where cytology and histopathology services are logistically and technically not feasible.

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