

EVALUATION OF CERVICAL ABNORMALITY WITH COLPOSCOPY AND CYTOLOGY

Authors:

1. Dr Subhasis Panigrahy, Senior Specialist (Obst & Gynaec.), Ganjam, H&FW

Dept. Govt.of Odisha

2. Dr Nihar Ranjan Behera, Associate Profesor(Obst & Gynaec.), SCB Medical college, Cuttack, Odisha

3. Dr Subhalaxmi Dash , Asst. Professor(Obst & Gynaec.), MKCG Medical College, Berhampur, Odisha

Corresponding Author:

Dr Subhalaxmi Dash , Asst. Professor(Obst & Gynaec.), MKCG Medical College, Berhampur, Odisha, Tel.556907920, Email: drsubhalaxmidash@gmail.com

ABSTRACT BACKGROUND Abnormal cervix includes varying lesions like chronic cervicitis, erosion, eversion, leukoplakia, polyps. Cancer cervix is a major of mortality in India. Loss of life from cancer of cervix can be reduced by early detection of precancerous conditions and their sequelae and their treatment will go a long way in preventing overt carcinoma of cervix. Here comes the value of a valuable aid in clinical evaluation of precancerous lesions of the cervix.

OBJECTIVE: The objective of the present study was to evaluate the role of colposcopy in cases of abnormal cervix and compare it with cytologic examination.

MATERIALS & METHODS : A prospective study conducted from January 2019 to September 2020 in the Department of O & G, MKCG Medical College, Berhampur. total number of 307 cases with abnormal Pap smear, cervicovaginal discharge or bleeding or with obvious abnormal looking cervix were examined after taking formal consent. Patients with concurrent illness, concomitant therapy, pregnancy or overt cases of carcinoma of cervix were excluded from the study. Colposcopic examination was done using 3% acetic acid. Colposcopic directed biopsy was taken and tissue was sent for histopathology. **RESULTS :** Majority of patients had abnormal cervix in the age group of 31 to 40 years with multiparity. Sensitivity and specificity of Pap smear were 82.92% and 95.81% respectively and those of colposcopy were 97.56% and respectively. Combination of both methods showed sensitivity & specificity of 82.92%

and 99.06% respectively. **CONCLUSION** Colposcopy cannot replace cytology. However, when both methods combined together the diagnostic accuracy improved.

KEYWORDS

Abnormal Cervix, Cytology, Histopathology.

INTRODUCTION:

The burning problem in the present days in females is cervical cancer. The volume of literature contributed to this disease is staggering and rises even more steeply every day. Yet more contributions are warranted for the substance of science for continuous refinement. The one-inch long cervix for its anatomical position and structure has been the most notorious site for endless trouble. The abnormal cervix may lead to sequence of symptoms. This may give rise to disharmony in life. The clinical importance is all the greater when one realises that some of the tissues of abnormal cervix are undesirably precancerous. Colposcope provides an optical method for examining the illuminated cervix and lower genital tract at a magnification intermediate between the naked eye and low power microscope. In high-resource settings, colposcopy (ie, examination of the cervix after application of 3–5% acetic acid to guide biopsies) remains the preferred procedure after a positive cervical cytology result or human papillomavirus (HPV) test. The accuracy of colposcopy to guide treatment is strongly related to training and expertise of colposcopists and the number and placement of biopsies. Colposcopy services remain scarce in many low-income and middle-income countries. WHO is calling for global cervical cancer elimination.[1] To succeed, screening and management strategies that could be widely implemented in low-resource settings, where the disease burden tends to be the highest, are needed. Today, colposcopy stands between cytology and histology i.e. between population screening and definite tissue diagnosis.[2] The great value of colposcopy lies in its ability to pinpoint the most suspicious area on the cervix for target biopsy. Keeping all these in view the present work has been undertaken to study colposcopically the abnormal cervical lesion. Efforts have been made to assess the value of colposcopy as a clinical aid in diagnosis of cervical abnormalities and to assess its accuracy. With this background in mind the present study has been undertaken to evaluate the role of colposcopy in cases of abnormal cervix and specifically to determine the advantages of colposcopic examination in detecting precancerous lesions in cases of abnormal looking cervix.

MATERIALS AND METHODS

The study was a prospective longitudinal comparative study. Women attending Obstetrics & Gynaecology Department of MKCG Medical College & Hospital, Berhampur during the period of January 2019 to September 2020 were included in this study.

Inclusion Criteria

1. Patient with abnormal Pap smear.
2. Patient presenting with cervicovaginal discharge or bleeding, even with negative Pap smear.
3. Patient presenting with obvious abnormal looking cervix irrespective of cervicovaginal discharge or bleeding or Pap smear results.

Exclusion Criteria

- Concurrent illness.
- Concomitant therapy.
- Pregnancy & lactation.
- Overt cases of carcinoma cervix.
- Noncompliance.
- Cases not requiring biopsy after cytology and Colposcopy

A Detailed History of each individual was taken as Chief complaints with duration, Menstrual history starting from the age of menarche to the date of last menstrual period. Detailed obstetric history with reference to date of marriage, number of pregnancies and their outcome. Leading questions were asked about post-coital bleeding, history of malignancy in the family and use of any contraceptive measures. After history taking a written informed consent was taken for colposcopy and biopsy.

A Thorough General and Systemic Examination was done. Subsequently Speculum Examination was done in Dorsal Position and the following Observations were noted-

- Naked eye appearance of cervix and vagina and nature of discharge, if any.
- Extent and nature of cervical lesion.
- Any contact bleeding during examination.
- Presence of genital prolapse.

Lastly, a bimanual examination was done to know the position and size of uterus, feel of cervix, any adnexal mass, induration or tenderness in the fornices.

Collection and Examination of Cervical Smear

Patient having abnormal cervix on per speculum examination with or without any other symptoms, were subjected for cervical cytology followed by colposcopic evaluation and guided biopsy. Cytological findings were correlated with colposcopic findings and guided biopsy. Biopsy report was considered as conclusive diagnosis to the collection of smear. By placing longer end of spatula gently against the external os, the squamocolumnar junction was readily approached. In this position, rotatory movements through 360° permitted light scraping of entire squamocolumnar junction throughout its circumference. The material so obtained was rapidly spread over two clean, dry and pre-labelled glass slides. The smeared slides were immediately placed before drying in a Coplin jar containing equal parts of ether and 95% alcohol for fixation. They were kept in fixative for at least half an hour. The smears collected in this way were stained by modified Papanicolaou technique.

Colposcopic Examination

Colposcopic examination was done as day care procedure. The colposcope used in this study gives a stereoscopic vision. It has got a focal length of 30 cm with a magnification of 5X, 10X and 20X. It is attached to the stand by means of two adjustable arms through which the instruments can be moved in horizontal and vertical direction and fixed as required by locking screws. It has got a switch at the base of the stand meant for turning illumination on or off.

Procedure for Colposcopic Examination

The woman was placed in lithotomy position and the cervix was exposed by gently introducing the Cusco's bivalve speculum. By gentle manipulation, the cervix was placed at right angles to the incident light and then the colposcope was adjusted till the focal length was obtained for optical resolution. The cervix was visualised unprepared after moistening it with normal saline to increase the transparency of the exposed surface. After analysing the data, comparison between cytology, colposcopy and histopathology was done. Then sensitivity, specificity, positive predictive value was calculated. Mucus plugs if any were gently removed with small dry cotton wool swabs. Gross lesions, vascular details and opacity of the epithelium could be ascertained at this examination. The cervix then viewed with green filter to study vascular configuration of tissue. The vessels appeared as dark structure against the green background and the vascular pattern was noted. Subsequently, the cervix was treated with freshly prepared solution of 3% acetic acid applied generously and very

gently to avoid any bleeding from the cervix and it was examined again. Acetic acid coagulates the mucus which was then removed from the clefts and folds of columnar epithelium, grape like structure of columnar epithelium then became clear. Acetic acid also removed water from the cells temporarily, particularly from the area of high nuclear density like immature squamous epithelium and dyskaryotic cells. Epithelium became white and cell demarcated. Action of acetic acid; however, was very short lived. Therefore, frequent applications were necessary during the examination. Finally, the cervix was painted with Lugo's iodine and inspected. Colposcopically directed biopsy was taken in the operation theatre from all cases studied to assess the accuracy of colposcopic findings. The tissues obtained were sent for histopathological examination. The colposcopic impression was recorded in a diagrammatic manner. The abnormal colposcopic findings were graded according to Reid Colposcopic Index Scoring (1985). After analysing the data, comparison between cytology, colposcopy and histopathology was done. Then sensitivity, specificity, positive predictive values were calculated.

Observation

The study entitled "Colposcopic Evaluation of Abnormal Cervix" includes 307 cases of abnormal cervix selected at random out of cases attending the Gynaecology OPD from January 2019 to September 2020. The results were analysed as follows

Age in Years	No. of Cases	Percentage (%)
21 – 30 yrs.	34	11.07
31 – 40 yrs.	122	39.74
41 – 50 yrs.	89	28.99
51 – 60 yrs.	55	17.92
61 – 70 yrs.	7	2.98
Total	307	100

Table 1. Age Distribution of Cases

It is apparent from the above table that out of 307 cases, abnormal cervix was found in 34 cases (11.07%) in the age group of 21-30 years, 122 cases (39.74%) in the age group of 31-40 years, 89 cases (28.99%) in 41-50 years of age group, 55 cases (17.92%) in 51-60 years of age group and 7 cases (2.98%) in the age group of 61-70 years.

Parity	No. of Cases	Percentage (%)
Nullipara	5	1.63
Primipara	22	7.17
Multipara	182	59.28
Grand multipara	98	31.92
Total	307	100

Table 2. Parity Distribution of Cases

This table shows that abnormal cervix found in 5 (1.63%) cases of nullipara, 22 (7.17%) cases of primipara, 182 (59.28%) cases of multipara and 98 (31.92%) cases of grand multipara patients.

Socio-Economic Status	No. of Cases	(%)
Low	239	77.85
Middle	59	19.22
High	9	2.93
Total	307	100

Table 3. Socio-economic Status

As evident from the above table, abnormal cervix was found in 239 (77.85%) patients of low socio-economic status, 59 (19.22%) patients of middle socio-economic status and 9 (2.93%) patients of high socio-economic status.

Symptoms	No. of Cases	Percentage (%)
White discharge	173	56.35
White discharge with pruritis	57	18.57
Intermenstrual bleeding	14	4.56
Post-coital bleeding	13	4.23
Post-menopausal bleeding	11	3.58
Blood stained discharge	22	7.17
Foul smelling discharge	17	5.54
Total	307	100

Table 4. Presenting Symptoms

The present series shows that, out of 307 patients, 173 (56.35%) patients presented with white discharge, 57 (18.75%) patients presented with white discharge and pruritis, 14 patients (4.56%) with intermenstrual bleeding, 13 (4.23%) patients with post-coital bleeding, 11 (3.58%) patients with post-menopausal bleeding, 22 patients

(7.17%) were having blood stained discharge and 17 (5.54%) patients were having foul smelling discharge as shown in Table – 4.

Findings	No. of Cases	Percentage (%)
Hypertrophy of cervix	67	21.82
Cervical erosion	118	38.44
Prolapse with decubitus ulcer	50	16.28
Cervical polyp	10	3.26
Other unhealthy ulcers	38	12.38
Leukoplakia	24	7.82
Total	307	100

Table 5. Types of Abnormal Cervix

The above table shows that out of total patients, 67 (21.82%) patients presented with hypertrophy of cervix, 118 (38.44%) patients with cervical erosion and 50 (16.28%) patients with prolapse with decubitus ulcer. Cervical polyp was found in 10 (3.26%) patients, other unhealthy ulcer in 38 (12.38%) patients and leukoplakia in 24 (7.82%) patients.

Results	No. of Cases	Percentage (%)
Normal	5	1.62
Inflammatory	251	81.76
Mild dysplasia (CIN-I)	30	9.78
Moderate dysplasia (CIN-II)	9	2.94
Moderate dysplasia (CIN-III)	8	2.60
Invasive carcinoma	4	1.30
Total	307	100

Table 6. Cytological Diagnosis by Pap Smear

This table shows the cytological findings in clinically detected abnormal cervix. The cytological findings were normal in 5 (1.62%) cases and inflammatory in 251 (81.76%) cases. CIN-I was found in 30 (9.78%) cases, CIN-II in 9 (2.94%) cases, CIN-III in 8 (2.60%) cases and invasive cancer in 4 (1.30%) cases.

Colposcopic Appearance		No. of Cases	Percentage (%)
Normal colposcopic findings		17	5.54
Abnormal colposcopic findings suggestive of CIN		52	16.94
Colposcopic features suggestive of invasive cancer		05	1.63
Miscellaneous findings	Erosion	118	38.44
	Keratosi	24	7.81
	Inflammation	68	22.15
	Polyp	09	2.93
Unsatisfactory colposcopy		14	4.56
Total		307	100
<i>Table 7. Colposcopic Observation</i>			

Out of 307 cases, 17 (5.54%) patients had normal colposcopic findings, 52 (16.94%) had abnormal colposcopic findings, 05 (1.63%) had colposcopic features suggestive of invasive cancer. Erosion was found in 118 (38.44%) patients, keratosis in 24 (7.81%) patients, inflammation in 68 (22.15%) patients and polyp in 9 (2.93%) patients. Colposcopy was found to be unsatisfactory in 14 patients (4.56%) as per the above table.

Histology	No. of Cases	Percentage (%)
Normal	7	2.28
Inflammatory	251	81.76
CIN-I	20	6.52
CIN-II	16	5.21
CIN-III	7	2.28
Invasive Carcinoma	6	1.95
Total	307	100
<i>Table 8. Histological Findings of Abnormal Cervix</i>		

This table shows histological findings in clinically detected abnormal cervix. Histological findings were normal in 7 (2.28%) patients, inflammatory in 251 (81.76%) patients. CIN-I found in 20 (6.52%) cases, CIN-II in 16 (5.21%) cases, CIN-III in 7 (2.28%) cases. Findings were suggestive of invasive cancer in 6 (1.95%) cases.

Results	Cytology	Histopathology
Normal/Inflammation	256 (83.38%)	258 (84.04%)
CIN-I	30 (9.78%)	20 (6.52%)
CIN-II	9 (2.94%)	16 (5.21%)
CIN-III	8 (2.60%)	7 (2.28%)
Invasive Carcinoma	4 (1.30%)	6 (1.95%)
Total	307 (100%)	307 (100%)
<i>Table 9. Comparison between Cytology and Histo-pathology</i>		

As observed from the above table, results were normal/inflammation in 256 (83.38%) patients by cytology and 258 (84.04%) patients by histology. CIN-I was found in 30 (9.78%) patients by cytology and 20 (6.52%) patients by histology, CIN-II in 9 (2.94%) patients by cytology and 16 (5.21%) patients by histology, CIN-III was found in 8 (2.60%) patients by cytology and 7 (2.28%) patients by histology, invasive cancer was found in 4 (1.30%) patients by cytology and 6 (1.95%) patients by histology.

Cytology	Histology		Total
	Positive	Negative	
Positive	41	10	51
Negative	8	248	256
Total	49	258	307
<i>Table 10. Predictive Value of Cytology</i>			

Sensitivity = 83.67% ,Specificity = 96.12% This table shows that sensitivity of cytology was 83.67%, whereas specificity was 96.12%, positive predictive value was 80.39%. False positive rate and false negative rates were 19.61% and 3.12% respectively

Colposcopy	Histology		Total
	Positive	Negative	
Positive	48	9	57
Negative	1	249	250
Total	49	258	307
<i>Table 11. Predictive Value of Colposcopy</i>			

Sensitivity = 97.96% ,Specificity = 96.51% ,Positive predictive value = 84.21%. This table shows that sensitivity of colposcopy was 97.96%, whereas specificity was 96.51%, positive predictive value was 84.21%.

CONCLUSION

The present study entitled "Colposcopic Evaluation of Abnormal Cervix" includes 307 cases with clinical features of abnormal looking cervix. Cervical cytology by Papanicolaou smear, colposcopy and cervical biopsy were done in all cases.

The Result of Study revealed the following Facts:Majority of women having abnormal cervix were in the age group of 31- 40 years in 39.74% cases with multiparity i.e. para 2 and more in 91.2%. Most cases with abnormal cervix presented with white discharge with or without pruritis (74.92%), this finding is also detected in other studies.⁶ The appearance of cervix on per speculum examination showed erosion in majority (38.44%). Pap smear revealed inflammatory changes in 81.76%, cervical intraepithelial neoplasia in 15.32% and invasive carcinoma in 1.30% cases.

The colposcopic examination revealed normal colposcopic findings in 5.54%, abnormal findings suggestive of CIN in 16.94%, features suggestive of invasive cancer in 1.63%, erosion, keratosis, inflammation and polyp in 38.44%, 7.81%, 22.15%, 2.93% respectively. Colposcopy was unsatisfactory in 4.56% cases. Most common colposcopic finding in patients with abnormal cervix was acetowhite areas (62%).The colposcopic incidence of CIN-I, II, III were 7.17%, 6.50% and 3.26% respectively in present study. Invasive carcinoma was detected in 1.63% cases. In the present study, the sensitivity and specificity of cytological study (Pap smear) was 83.67% and 96.12% respectively with positive predictive value 80.39%. False positive rate was 19.61% and false negative rate 3.12%. The predictive value of colposcopy in detecting pre-malignant and malignant lesion was 84.21% in the present study whereas sensitivity was 97.96% and specificity was 96.51%. The false positive and false negative rates were 15.78% and 0.48% respectively. Combination of both methods improved the diagnostic accuracy showing sensitivity 83.67%, specificity 99.22% and positive predictive value 95.35%. However, false positive and false negative rates were 4.65% and 3.03% respectively. From the present study, it has been concluded that colposcopy does not replace cytology, but is an essential partner to it in studying cervical lesions. The great value of colposcopy lies in

pinpointing the area on the cervix for a target biopsy in order to establish the true nature of the lesion. In addition to the diagnosis, it gives an idea about the extent of lesion on the cervix, thus helping in the management. Current status of colposcopy is between cytology and histology^{6,7,9}. Since colposcopically directed biopsy is highly accurate in sampling the most advanced lesion at the cervix, it is suggested that colposcope should be available in referral centres as well as in peripheral hospitals along with properly trained personnel.^{8,10} Patient presenting with abnormal cervix should be examined both cytologically and colposcopically to ensure optimal detection of pre and early neoplastic lesions of cervix as combination of colposcopy and cytology improves the diagnostic accuracy in patients with abnormal cervix¹⁰.

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