

# Evaluation of Cervical Lesions: A Prospective Study

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## Abstract

**Introduction:** Cancer cervix has a long pre-invasive stage, giving an opportunity for its early detection and treatment. The main objective of present study was the earliest detection of cancer cervix by simple and low-cost screening programs in the low setting, in countries like India. Papanicolaou smear remains easiest, simple, quick, and oldest method of screening premalignant lesions of the cervix.

**Aims and Objectives:** To study the clinicopathological profile in various high-risk group patients, to differentiate between benign and malignant cervical lesions and to study the prevalence of cervical dysplasia in relation to various high-risk factors.

**Materials and Methods:** The present study became a hospital-based short-term prospective study and was conducted from November 2006 to October 2007 in the Department of Obstetrics and Gynecology, People's College of Medical Sciences and Research Center and People's Hospital, Bhopal, Madhya Pradesh, India. These cases have been closely studied by taking history; physical examination and cervical smear examination.

**Result:** Out of 500 high-risk cases, normal smear cases were found in 1.6%, inflammatory smear cases in 80%, low-grade squamous intraepithelial lesions (LSIL) were in 14.4%, while high-grade squamous intraepithelial lesions (HSIL) were found in 2.8%, dysplasia (LSIL + HSIL) in 17.2%, and malignancy were found in 1.2% of cases. The higher number of dysplasia cases were seen in rural population (82.55%) as compared to urban population (17.44%). Maximum number of dysplasia was seen in the age group of 30-39 years (34.88%) and invasive carcinomas among the age group of 40-49 years (50%). Prevalence of dysplasia was high (79.34%) in women of high parity. Most frequent complaints of the patients in relation to dysplasia were leucorrhoea (97.67%), pain in lower abdomen (54.65%), and backache (39.53%).

**Conclusion:** The cytological method of diagnosis is a convenient, valuable, technically sound, and feasible method for detection of unsuspected carcinoma of the genital tract and precancerous lesions at the time when they are not evident clinically.

**Key words:** Carcinoma, Cervix, Dysplasia, Pap smear, Precancerous

## INTRODUCTION

Carcinoma cervix worldwide accounts for 15% of all cancers diagnosed in women.<sup>1</sup> It is estimated that cervical cancer is one of leading cancers in women in about 5.0 lakhs new cases every year of which 80% occur in developing countries like India.<sup>2</sup> In India, it is estimated that the number of new cases are over 140,000.<sup>3</sup> Cancer

cervix occupies the top rank or second among cancers in women in developing countries.

So that, there is an urgent need for initiation of community screening and educational programs within the source for the control and prevention of cervical cancer in India.<sup>4</sup>

Papanicolaou (Pap) smears are used to screen for cervical cancer, here the "screening for cancer" means looking for cancer before a person has symptoms. There are no organized screening programs in any province or region of India. Screening of asymptomatic women is practically absent, even among otherwise well-organized health care programs of the industrial and military sectors.<sup>5</sup> Resource constraint has been a major hurdle in organizing screening programs. It has been estimated that in India, even with

### Access this article online



www.ijss-sn.com

**Month of Submission :** 12-2015

**Month of Peer Review :** 01-2016

**Month of Acceptance :** 01-2016

**Month of Publishing :** 02-2016

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a major effort to expand cytology services, it will not be possible to screen even one-fourth of the population once in a lifetime in the near future.<sup>6</sup>

Conventional cytology is offered sporadically to women in selected urban areas attending health services for other reasons, but not as routine screening of asymptomatic women. According to the WHO Health Survey in 2002, 2.6% of 4586 women aged 18-69 years ever had a Pap smear.<sup>7</sup>

In India, the operating factors are low standards of cleanliness, coitus or marriage at an early age, the frequency of sexual intercourse, promiscuity of both partners, men in jobs which require frequent travel and those whose first wife died of cancer cervix constitute a group termed as high-risk males. High parity, sexual transmitted diseases, HIV infection, herpes simplex virus II, family history of cancer, drug abuse and alcohol, make the women at risk for cancer cervix.

Although cervical cancer remains a serious problem in developing countries, its incidence and mortality rates have decreased significantly in developed countries due to effective screening programs.

Hence, the main objective of this study is the early detection of cancer cervix by simple and low-cost screening programs in low-resource settings, in countries like India because cancer cervix has a long pre-invasive stage, giving an opportunity for its early detection and treatment. Pap smear remains easiest, simple, quick, and oldest method of screening premalignant lesions of the cervix.

## MATERIALS AND METHODS

The present study became a hospital-based short-term prospective study and was conducted from November 2006 to October 2007 in the Department of Obstetrics and Gynecology, People's College of Medical Sciences and Research Center and People's Hospital, Bhopal, Madhya Pradesh, India. The target population in which the present study was carried out comprised of 500 women of different age, parity, religion, educational, and socioeconomic status, who have been attending the outpatient department (OPD) of above department.

### Inclusion Criteria

Women with complaints or history suggestive of: Leucorrhoea, lower genital tract infections, post coital bleeding, irregular menstruation, and post-menopausal bleeding.

### Exclusion Criteria

Post-operative cases of hysterectomy, Advance cases of cervical cancer.

## Data Collection Methodology

### Selection of study participants

All patients, those were attending the OPDs of Department of Obstetrics and Gynecology People's College of Medical Sciences and Research Center and People's Hospital, Bhopal, Madhya Pradesh, India.

### Collection of sample and preparation of smear

Detail patient's history, physical examination, and per speculum examination was done, the vaginal discharges were noted, and the condition of cervix and vagina was observed. Subsequently, cervical smear was taken; this was followed by per vaginal examination in which the uterus and the adnexa were examined thoroughly.

Two cervical smears were prepared from every case. Slides were fixed in 95% alcohol and stained by Pap method. All slides were thoroughly studied in the Department of Pathology, Peoples Medical College and Research Centre, Bhopal.

### Method of taking vaginal smear

For the collection of vaginal secretions, various workers have devised different technique and used different instruments. In the present study, cervical scraped method was performed.

## Statistical Analysis

The data have been collected on excel sheet and results were analyzed by applying Chi-square and fisher exact test (*P*) accordingly. The results obtained were depicted in the form of tables and graphs that are self-explanatory.

## RESULTS

Out of 500 high-risk cases, normal smear cases were found in 1.6% ( $n = 8$ ), inflammatory smear cases in 80% ( $n = 400$ ), low-grade squamous intraepithelial lesions (LSIL) were in 14.4% ( $n = 72$ ), while high-grade squamous intraepithelial lesions (HSIL) were found in 2.8% ( $n = 14$ ), dysplasia (LSIL + HSIL) in 17.2% ( $n = 86$ ), and malignancy were found in 1.2% ( $n = 6$ ) of cases (Table 1).

**Table 1: Distribution of cases depending on cytology report**

Cytology report	Number of cases	Percentage
Normal smear	8	1.6
Inflammatory smear	400	80
LSIL	72	14.4
HSIL	14	2.8
Malignancy	6	1.2
Total	500	100

LSIL: Low-grade squamous intraepithelial lesions, HSIL: High-grade squamous intraepithelial lesions

The higher number of dysplasia cases were seen in rural population (82.55%) as compared to urban population (17.44%) (Table 2).

Maximum number of dysplasia was seen in the age group of 30-39 years (34.88%) and invasive carcinomas among the age group of 40-49 years (50%) (Table 3).

In the present study, early childbirth below 18 years of age shows a strong correlation of disease with dysplasia. Out of 332 numbers of cases which belong to this group, dysplasia was found in 53 (61.63%). Out of 6 patients who had malignancy 4 (66.66%) were <18 years of age at the time of their first childbirth (Table 4).

Prevalence of dysplasia was high (79.34%) in women of high parity (Table 5).

Out of 500 cases illiterate patients were 286 (57.2%) and literate 214 (42.8%). The maximum number of dysplasia was among the illiterate population, i.e., 54 (62.79%).

Out of 500 cases, the history of addiction of tobacco intake was found in 135 (27%) cases from which 31 (36.04%) cases turned out to be positive for dysplasia (Table 6).

Out of total 500 cases, only 15 (3%) cases have a history of genital carcinomas in their family, and only 2 (2.32%) had dysplasia.

Most frequent complaints of the patients in relation to dysplasia were leucorrhoea (97.67%), pain in lower abdomen (54.65%), and backache (39.53%). Among post-menopausal women, dysplasia was detected in (10%) and invasive carcinoma in (50%) of cases (Table 7).

High number of dysplasia and cervical cancer were seen in association with unhealthy cervix which bleeds on touch (34.88%) and erosion (27.91%) (Table 8).

In the present study, out of 500 cases 55 (11%) used Barrier methods, 61(12.2%) used oral contraceptive pills and 233 (46.6%) had tubectomy done, and 151 (30.2%) cases did not use any method of contraception (Table 9).

Among the Barrier contraceptive users, dysplasia was found in 7 (8.14%), and malignancy was not reported in any of the

patients. This clearly shows a protective effect of Barrier methods from cervical carcinoma. Among the non-users, dysplasia was found in 36 (41.86%) and malignancy 3 (50%) cases. This is because of the poor motivation of family planning methods among the low socioeconomic group.

There is a strong correlation between non-contraceptive users and pre-invasive and invasive cancer which is statistically significant.

Out of 500 cases, Hindus comprised of 451 (90.2%), and Muslims comprised of 48 (9.6%). The cases of dysplasia in Hindus were 72 (83.72%) while in Muslims 14 (16.28%). This was apparently due to a higher percentage of Hindus in the population which resides in the nearby locality (Table 10).

## DISCUSSION

Gupta *et al.*<sup>8</sup> in their study observed that the epithelial abnormalities constituted (3.23%) of all cases. LSIL formed the largest number (1.36%), while HSIL formed (0.91%). 11 cases of squamous cell carcinoma (SCC) were detected. In the present study, the incidence of dysplasia was (14.4%), and malignant lesions were in (1.2%).

Patel *et al.*<sup>9</sup> in their study showed that there were 94.5% benign and inflammatory and (5.5%) were a premalignant and malignant lesion, out of which premalignant lesions (83.6%) were atypical cells of undetermined significance (ASCUS) and atypical glandular cells of undetermined significance (AGUS). ASCUS progresses to LSIL, HSIL, and SCC. AGUS progresses to adenocarcinoma.

In the present study, the maximum age of dysplasia has been found in the age group of 30-39 years (34.88%) and for invasive carcinoma 40-49 years (50%) and above. This fits with an average duration of 10-12 years for a pre-invasive lesion to become invasive. A recent study by Gupta *et al.* also found the maximum numbers of cases (40.37%) were among the age group of 30-39 years.

The present study demonstrates that cervical dysplasia was higher in rural population (82.55%) as compared to the urban population (17.44%). This may be explained by the better accessibility of health services and hence

**Table 2: Distribution of cases according to residential status**

Residential status	Normal smear	Inflammatory smear	LSIL	HSIL	Total (LSIL+HSIL)		Malignancy	Total	
					No.	%		No.	%
Rural	8	304	58	13	71	82.55	5	388	77.6
Urban	0	96	14	1	15	17.44	1	112	22.4
Total	8	400	72	14	86	100	6	500	100

LSIL: Low-grade squamous intraepithelial lesions, HSIL: High-grade squamous intraepithelial lesions

early detection of disease. There is a lack of personal hygiene in rural setup further contributing to infection and dysplastic changes in them. Mhaske *et al.*<sup>10</sup> considering the high prevalence of cervical cancer and various risk factors among rural women, community-based screening camps should be arranged so as to reduce the morbidity among rural women. As the significant association between age at marriage below 17 years, age at first childbirth <20 years, high parity and act regarding age at marriage should be strictly implemented in rural areas.

**Table 3: Distribution of cases according to age**

Age (in years)	Number of cases		
	Benign	Malignant	Total
10-29	104	16	120
30-39	171	31	202
40-49	93	32	125
>50	40	13	53
Total	408	92	500
Chi-square test=8.95		P=0.030	
Statistically significant			

**Table 4: Distribution of cases according to first childbirth**

First childbirth (in years)	Number of cases		
	Benign	Malignant	Total
<18	258	74	332
>18	150	18	168
Total	408	92	500
Chi-square test=9.954		P=0.002	
Fisher exact test (P)=0.001			
Statistically significant			

**Table 5: Distribution of cases depending on the parity**

Parity	Number of cases		
	Benign	Malignant	Total
<3	139	19	158
>3	269	73	342
Total	408	92	500
Chi-square test=6.252		P=0.012	
Fisher exact test (P)=0.013			
Statistically significant			

**Table 6: Distribution of cases according to tobacco intake**

Tobacco intake	Normal smear	Inflammatory smear	LSIL	HSIL	Total (LSIL+HSIL)	Malignancy	Total
					n (%)		n (%)
Yes	3	100	20	11	31 (36.04)	1	135 (27)
No	5	300	50	3	53 (61.62)	5	365 (73)
Total	8	400	72	14	86 (100)	6	500 (100)
Chi-square test=3.465					P=0.063		
Statistically not significant							

LSIL: Low-grade squamous intraepithelial lesions, HSIL: High-grade squamous intraepithelial lesions

In our study, dysplasia was found in (54.63%) among women who had their marriage between 14 and 16 years of age. When studied according to the age at first childbirth, the majority of cases of dysplasia (61.63%) were found in women who had the birth of their first child below 18 years of age. Dutta *et al.*<sup>11</sup> in their study found that estimated relative risk for developing cancer cervix among women getting married before 17 years of age was found to be 7.9 as compared to women who were married after the age of 17 years.

Mohanty *et al.*<sup>12</sup> in their study observed that there was a decline of cancer cervix as the age of 1<sup>st</sup> marriage/1<sup>st</sup> pregnancy advanced to 20-24 years. Early age at marriage indicates an early exposure sexual activities and early pregnancy which are well-known etiological factors for carcinoma cervix.

In our study, the majority of women with dysplasia and malignancy were with parity >3 children (79.34%). According to Tapasvi *et al.*<sup>13</sup> among the 100 cases, 51 women had a history of 3 or 4 paras and only 7 women were nulliparous. It was observed that higher he parity, greater the frequency of occurrence of carcinoma of the cervix and associated premalignant conditions. 1 (7.6%), 6 (46.15%), and 6 (46.15%) patients had dysplastic changes among the 1-2 para, 3-4 para, and 5 and above paras, respectively. Similarly, 6 (20.7%), 15 (51.72%), and 8 (27.6%) women had cervical intraepithelial neoplasia (CIN)/cervical carcinoma *in situ* (CIS) changes on cytology among the 1-2 para, 3-4 para, and 5 and above paras, respectively. None of the nulliparous women had either of dysplasia, atypical transformation zone (TZ), CIN/CIS, or invasive carcinoma.

In present study, 11% of patients were using Barrier contraception while (46%) were sterilized. Tapasvi *et al.* also observed that 4/10 women who practiced Barrier contraception using condoms had CIN on histopathology. Out of 13 cases that had dysplasia on cytology 11 (84.6%) had a history of bilateral tubectomy. 17/52 women who had a history of bilateral tubectomy had CIN on histopathology. This higher incidence of cervical cancer in patients with high possibility of unprotective intercourse

**Table 7: Distribution of cases according to presenting complaints**

Complaints	Normal smear	Inflammatory smear	LSIL	HSIL	Total (LSIL+HSIL)	Malignancy	Total
					n (%)		n (%)
White discharge	8	362	70	14	84 (97.67)	5	459 (91.8)
Pain in lower abdomen	5	262	38	9	47 (54.65)	0	314 (62.8)
Backache	1	102	30	4	34 (39.53)	0	137 (27.4)
Irregular menses	2	34	8	4	12 (13.95)	1	48 (9.6)
Urinary complaints	0	4	2	0	2 (2.32)	0	6 (1.2)
Post-menopausal complaints	0	27	0	2	2 (2.32)	0	29 (5.8)
Blood mixed discharge	0	5	0	0	0 (0)	0	5 (1)
Itching in private parts	0	5	0	0	0 (0)	0	5 (1)
For checkup (asymptomatic)	0	0	0	0	0 (0)	0	0 (0)
Others	0	0	0	0	0 (0)	0	0 (0)

Chi-square test=5.2

P=0.023

Fisher exact test (P)=0.019

Statistically significant

LSIL: Low-grade squamous intraepithelial lesions, HSIL: High-grade squamous intraepithelial lesions

**Table 8: Distribution of cases according to per speculum examination of cervix**

Per speculum examination of cervix	Normal smear	Inflammatory smear	LSIL	HSIL	Total (LSIL+HSIL)	Malignancy	Total
					n (%)		n (%)
Normal	0	4	2	0	2 (2.32)	0	6 (1.2)
Congested	3	19	6	1	7 (8.14)	1	30 (6)
Bleeds on touch	0	23	19	11	30 (34.88)	3	56 (11.2)
Erosion	5	208	23	1	24 (27.91)	1	238 (47.6)
Hypertrophy	0	101	20	0	20 (23.25)	0	121 (24.2)
Growth/ulcer	0	12	0	0	0 (0)	0	12 (2.4)
Nabothian cyst	0	33	2	1	3 (3.48)	1	37 (7.4)
Total	8	400	72	14	86 (100)	6	500 (100)

LSIL: Low-grade squamous intraepithelial lesions, HSIL: High-grade squamous intraepithelial lesions

**Table 9: Distribution of cases according to contraceptive uses**

Contraceptive method	Normal smear	Inflammatory smear	LSIL	HSIL	Total (LSIL+HSIL)	Malignancy	Total
					n (%)		n (%)
Barrier	0	48	7	0	7 (8.14)	0	55 (11)
OCP	4	51	5	0	5 (5.81)	1	61 (12.2)
Sterilization	3	190	33	5	38 (44.17)	2	233 (46.6)
Nil	1	111	27	9	36 (41.86)	3	151 (30.2)
Total	8	400	72	14	86 (100)	6	500 (100)

LSIL: Low-grade squamous intraepithelial lesions, HSIL: High-grade squamous intraepithelial lesions, OCP: Oral contraceptive pills

**Table 10: Distribution of cases according to religions**

Religion	Normal smear	Inflammatory smear	LSIL	HSIL	Total (LSIL+HSIL)	Malignancy	Total
					n (%)		n (%)
Hindu	7	366	59	13	72 (83.72)	6	451 (90.2)
Muslim	1	33	13	1	14 (16.28)	0	48 (9.6)
Christian	0	1	0	0	0 (0)	0	1 (0.2)
Sikh	0	0	0	0	0 (0)	0	0 (0)
Total	8	400	72	14	86 (100)	6	500 (100)

LSIL: Low-grade squamous intraepithelial lesions, HSIL: High-grade squamous intraepithelial lesions

is in concordance with other studies conducted in various parts of the world.<sup>14</sup>

In the present study, tobacco addiction was present in (27%) of cases out of which 36.04% cases were have

dysplasia. Brinton *et al.*<sup>15</sup> stated that smoking increased risk for SCC and the risk increased with duration and intensity of smoking. A study by Gupta *et al.* also found that the prevalence of dysplasia was more in smokers (17.24%) as compared to nonsmokers (2.61%).

In our study, a higher incidence of dysplasia (87.72%) was found in Hindu community as compared to Muslim (16.28%). This can be explained by the fact that Hindus comprised of major number in the study were belonging to low socioeconomic status, and their partners were uncircumcised.

Tapasvi *et al.*, among 100 women studied, 67 women practiced Hinduism, from which 19 (28.35%) women had atypical TZ and 31 women were Muslims from which 07 (22.6%) of women had Atypical TZ.

In our study, dysplasia cases were (60.47%), and malignancy (50%) was among income group 500-2000 which is a low-income group, and it clearly shows an association of low socioeconomic status and high prevalence of dysplasia and invasive cancer. Similarly, in a study by Tapasvi *et al.*, with regards to socioeconomic status, 37 women were found as unskilled workers (Status V) and formed the largest occupational/socioeconomic group, whereas only 3 women were spouses of highly qualified professionals such as professors, doctors, and lawyers. Wives of semi-skilled workers formed the second largest group of workers with 28 women forming this occupational/socioeconomic group. 9 (24.32%) women belonging to Status V socioeconomic status showed atypical TZ and 7 (18.91%) cases showed dysplastic cells by cytology.

In our study, patients with dysplasia presented most commonly with leukorrhea (97.53%) followed by pain in lower abdomen (54.65%) and backache (39.53%). Hence, patients with these complaints fall in a high-risk category for carcinoma cervix and dysplasia and must be screened by cervical cytology.

High incidence of inflammatory smear has been seen in association with erosions in (52%) and hypertrophied cervix in (25.25%) of cases. Unhealthy cervix which bleeds on touch very frequently showed severe dysplastic changes (34.88%) and invasive carcinoma (50%).

Abd *et al.*<sup>16</sup> observed that the overall predictive value of cytology was 87% while the predictive value for high-grade lesions was 80%.

Lulla *et al.*<sup>17</sup> considered age at marriage, years of married life, parity, genital infection, use of the intrauterine contraceptive device, etc., to be significant risk factors.

The sensitivity of cytology in detecting dysplastic changes is undoubtedly high since the cervical scrape method from the TZ has been used, but true false negative and false positive results exist. False negative results might also be due to unsatisfactory smears. It was not feasible to make an

evaluation of false negative results, as patients with negative smear did not report for follow-up studies.

Misra *et al.*<sup>18</sup> concluded that women of high age with high parity are at very high-risk of developing carcinoma cervix, and this may be due to the cumulative effect of both these risk factors. Hence, women of this category need special attention for mandatory cytological screening.

## CONCLUSION

It can be concluded from this study that prevalence of cervical dysplasia and the invasive lesion is quite remarkable. The cytological method of diagnosis is convenient, valuable, technically sound, and feasible method for detection of unsuspected carcinoma of the genital tract and precancerous lesions at the time when they are not evident clinically.

It is important to identify the high-risk population and suggest social measures to motivate and educate women for a positive attitude toward cancer consciousness and to make screening program useful for prevention of premalignant and malignant diseases of the cervix.

## ACKNOWLEDGMENT

We acknowledge to Dr. B. Bhardwaj, Professor and Head Department of Obstetrics and Gynecology, People's College of Medical Sciences and Hospital, Bhopal, Madhya Pradesh, India; for their encouragement, advice, and providing support to us for the study.

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**How to cite this article:** Jain R, Walker R, Jain L, Jatav JK. Evaluation of Cervical Lesions: A Prospective Study. Int J Sci Stud 2016;3(11):63-69.

**Source of Support:** Nil, **Conflict of Interest:** None declared.