

## VISUAL INSPECTION OF CERVIX WITH LUGOL'S IODINE AND ACETIC ACID FOR EARLY DETECTION OF PREMALIGNANT AND MALIGNANT LESIONS OF CERVIX WITH COLPOSCOPY AND HPE CORRELATION

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### ABSTRACT

Background: Globally, carcinoma cervix is the fourth most common malignancy and second most common after breast carcinoma in women. In India, new cases of carcinoma cervix are 96,922 every year and the deaths due to cervical cancer is 60,078/year, according to 2018 statistics. Previously there was routine screening with cytology namely pap smear for all women who was and is sexually active. But due to the need for expertise in cytopathological studies, there came another alternative for screening. Now visual inspection with acetic acid and lugol's iodine is mostly recommended in low resource settings like India. Based on this our objective is to find out the incidence of cervical lesions in asymptomatic lady with visual inspection methods. Also, to compare the efficacy of Visual inspection methods with colposcopy and guided biopsy and to analyze the readiness in using Visual inspection methods as effective screening procedure in low resource setting Methods: This prospective study conducted in a tertiary care hospital for 1 year. This study comprises study subject of 620 women who were attending general and gynecology OPD. All 620 patients were subjected to visual inspection and magnification (VIA/VILI), colposcopy and biopsy was done in the positive patients. Results: Of 620 cases studied, colposcopy was positive in 80. Among 80 cases who were colposcopy positive, VIA/VILI was positive in 59 cases. Colposcopy guided biopsy was positive in 80 cases. The sensitivity of VIA/VILI in detecting preinvasive lesions was 91.88% and specificity was 100% when compared with colposcopy which has sensitivity 98.9% and specificity 100%. Conclusions: Hence the screening method of visual inspection methods came into action. This was very easy to perform and very useful for mass screening. The results are available readily so that the patients need not visit the health center twice. Thus, for low resource setting, VIA VILI is a great impact on the mass screening.

**KEYWORDS:** Biopsy, Cancer Cervix, Colposcopy, VIA, VILI

### INTRODUCTION

In developing countries, the most common genital cancer is cancer cervix but in developed countries it is the second most common cancer. Pre invasive disease of cancer cervix was introduced in 1947, in which malignant changes which depicted invasive cancer but they were confined only to epithelium. The pre -invasive stage for carcinoma cervix is 10 years to 15 years. Due to long pre-invasive stage, effective screening and proper treatment at the right time will prevent and reduce many deaths and morbidity due to carcinoma cervix.<sup>[1]</sup> The screening of carcinoma cervix has a very great impact on reducing the burden of carcinoma cervix. The main aim of screening is to detect pre-cancerous changes, if not

properly looked into and treated it will lead to invasive cancer.

Globally, carcinoma cervix is the fourth most common malignancy and second most common after breast carcinoma in women. The incidence is highest in African and Caribbean countries. There has been reported that about 570,000 new cancer cervix cases in 2018 which represents 6.6% of all female cancers.90% of deaths which resulted from cervical cancer occurred in low- and middle-income countries.<sup>[2]</sup> In India, new cases of carcinoma cervix are 96,922 every year and the deaths due to cervical cancer is 60,078/year, according to 2018 statistics.<sup>[3]</sup>

Previously there was routine screening with cytology namely pap smear for all women who was and is sexually active. But due to the need for expertise in cytopathological studies, there came another alternative for screening.

Now visual inspection with acetic acid and lugol's iodine is mostly recommended in low resource settings like India. The primary target for screening the pre- invasive stage of cervical carcinoma is that it has a very long pre- invasive period so that treatment and follow up is very much feasible and the impact of carcinoma cervix has been reduced. Moreover, screening of carcinoma is essential to understand the whole pathology of carcinogenesis. Opportunistic screening in various regions of India varied from 6.9% in Kerala 9 to 0.006% and 0.002% in the western state of Maharashtra and southern state of Tamil Nadu, respectively.

Based on this aim of our study is to find out the incidence of cervical lesions in asymptomatic lady with visual inspection methods. Also, to compare the efficacy of Visual inspection methods with colposcopy and guided biopsy and to analyze the readiness in using Visual inspection methods as effective screening procedure in low resource setting.

#### MATERIAL AND METHODOLOGY

This study was done as an observational prospective study on asymptomatic women mainly in the reproductive age. This is a hospital based prospective study held at Tirunelveli Medical college hospital from JANUARY 2018- JANUARY 2019. This includes the study sample of about 620 women who attended general and gynecology OPD. All these women were subjected to visual inspection method and magnification and pelvic examination as a screening procedure. These patients were then subjected to colposcopy and biopsy.

Women who are Sexually active in the age of 20-45, Non pregnant, Multiparous, Nulliparous and married women coming to general and gynecology OPD in willing for screening were included in the study. Whereas those with symptoms like pain and excessive discharge., Pregnant lady, severely ill and malnourished., Postpartum up to 12 weeks, Obvious growth in cervix, allergy to acetic acid and lugol's iodine, Not willing for screening, Women who are not sexually active, Post hysterectomy status, On hormonal therapy and women with history of cervical surgery were excluded from the study.

#### VIA/VILI examination and interpretation

Patient must be in lithotomy position, Cusco's speculum is inserted carefully, The cervix is noted and the discharge is noted, First inspect unstained cervix, Wash away the discharge with normal saline, Place a cotton swab with acetic acid on cervix for one minute, Inspection of cervix with acetic acid, Aceto white areas are noted and its margins, surface are noted, Inspection with lugol's iodine is done, Inspection of fornices and

vaginal walls done, Findings recorded, All the patients are subjected to colposcopy, Cervix vagina vulva are inspected, Green filters are used to find out the atypical vessels, Colposcopy form is filled up and abnormal areas are located in oddell's diagram, Colposcopic guided biopsy is done and sent for HPE correlation. Results obtained and compared.

**VIA NEGATIVE-** No acetowhite areas, Polyp in the os with acetowhite areas, Cysts -nabothian, Faint areas not well defined acetowhite areas in the SCJ, Pinkish white, bluish white with ill-defined margins which blends with cervix, Streak areas of aceto white area in the cervix, Dot like areas in the columnar epithelium, Reddish spots on the cervix, Ill-defined patch with faint acetowhite areas in ulcerated, bleeding cervix with muco purulent discharge.

**VILI POSITIVE -** The Bright mustard yellow / saffron yellow - Iodine non uptake areas. They are present in the squamocolumnar junction in the transformation zone.

**VILI NEGATIVE -** No yellow areas seen in the cervix when the normal cervix turns mahogany brown or black. The columnar epithelium doesn't change color. When in a ectropion, the columnar epithelium on the ecto cervix does not change the color. Leopard skin like associated with T. Vaginalis infection.

Pepper like non iodine areas are present in the squamous epithelium away from the SCJ. Ill defined, poorly defined areas in the cervix which are partially brown. Satellite thin yellow non iodine areas with angulating margins which resembles geographical areas which are far away from SCJ.

#### RESULTS

Coming to results and analysis out of 620 patients in our study group, we started with analysis of age distribution. Most of the women in our study group were in between 21-35 years which is 91.29%. Among them the maximum is 21-30 years.

In this study age at marriage was less than 20 in 31.94 percent of women, in this study the maximum percentage constitutes age at marriage between 21-25 years. -66.77 percent

In our study population coming to parity nulliparous were only 25 women while mostly it was Para 2 in our study group with 61.6 percent were Para 2 and it was Para 1 in 160 women. Para 4 and above was also minimal.

We next evaluated the contraception used in our study population puerperal sterilization is on higher side and women who undergo permanent sterilization had sexual intercourse without the fear of getting pregnant, thus increasing the cervical lesions. The women who underwent PS are 370 -59.68%.

We compared the outcome of biopsy result with different age group, among 620 women 84 had abnormal biopsy result. This was high in age group of 26-30 (n=40) and in 31-35 (n=33), this was statistically significant with p value of 0.001.

**Table 1: Comparison of Biopsy result with age group (n=620)**

Legend	Age	Biopsy normal	Biopsy positive
1	18-20	10 (1.6%)	0
2	21-25	205 (33%)	7 (1.1)
3	26-30	170 (27.4%)	40 (6.5)
4	31-35	111 (17.9%)	33 (5.3)
5	36-40	40(6.4%)	4 (.65)
	Total	536(86.3%)	84 (13.45)

Similarly, we also correlated the age of marriage and outcome of biopsy results. The women who had early sexual intercourse and age at marriage is early, the percentage of positive lesions are higher.11.61%. this association was also statistically significant (P value - 0.001)

Similarly coming to the relation between parity and biopsy results, the total positive lesions are 11.12%, among that the parity 2 and above constitutes 10.96%. Which is the majority in the group. Which shows as parity increases abnormal biopsy results increases.

Coming to level of education with positive lesions, the study shows the positive lesions in low level of literacy. Those who are degree holders have nil positive lesions because of the awareness and early screening. This was similar with socioeconomic status too, in our study among positive lesions, 7.26% are from low socio-economic class with income less than 2000/month. When the socio-economic class is very high like income more than 5000/month, the rate of positive lesions are less. - 0.48%.

Further we analyzed the contraception method with presence of lesion in biopsy, thus from the study, those women who practiced permanent sterilization had a higher risk of positive lesion because they don't have fear of getting pregnant so they have more chances of cervical lesions. But those with barrier methods are with caution and have nil risk in this study. This correlation was not statistically significant.

In VIA/VILI 60 had positive results, while in colposcopy 80 had positive lesion. We compared both these results with biopsy results and both had similar results which was highly significant. Furthermore, we analyzed VIA/VILI results with colposcopy findings where among 80 cases identified by colposcopy 59 was identified by VIA/VILI. Thus, in VIA/VILI and colposcopy, all the positive lesions were found to be positive when the biopsy was done. It has a good positive predictive value. But there are certain negative findings missed, thus

implies that it lacks in negative predictive value. The most common finding in biopsy was LSIL followed by Chronic non-specific cervicitis and few cases had HSIL.

**Table 2: Sensitivity and specificity of VIA/VILI.**

	VIA VILI vs BIOPSY	COLPO vs BIOPSY	VIA VILI vs COLPO
SENSITIVITY	91.88%	98.9%	92.34%
SPECIFICITY	100%	100%	99.78%
PPV	100%	100%	98.76%
NPV	97.86%	98.98%	99.54%
ACCURACY	97.54%	99.76%	98.56%

## DISCUSSION

This study is a prospective observational study that studies the efficacy of visual inspection methods with cervical biopsy and colposcopy and aims to choose the best low cost easily interpretable effective method for detecting cervical lesions.

In our study, age group between 21-35 years were 91.2% in this study. Likewise, the study conducted in AIIMS 2003<sup>[4]</sup>, to analyze the efficacy of the test conducted by the doctor and paramedical worker. This constituted the major age group of 30-39 years.

Similarly, the study conducted in Mumbai<sup>[5]</sup>, which was regarding the evaluation of visual inspection methods and HPV co testing for screening and detecting cervical neoplasia also had a study group concentrated around 30-39 in majority and concluded that younger batch has higher positive result.

The age at marriage was less than 20 in 31.94% in our study. This is similar to study conducted by Institute of Medical sciences in 2007.<sup>[6]</sup> In that study group 30.4 % had marriage age less than 20years. In a study at AIIMS 2003 at New Delhi<sup>[4]</sup> for finding out cervical lesions with their age at first sexual intercourse was 19+/- 3.3 years.

Most women in our study was Para 1 and Para 2 which is very routine in a developing countries like India. In our study, most women are Para 2 and they mostly undergo permanent sterilization so they have sexual intercourse without the fear of getting pregnant. In our study Para 2 constitutes about 61.61% which is in constituent with the small family norms.

In our study, the positive lesion was most of associated with low level of education. In my study most positive lesions was associated with low level of education 6.61%. Those whose have undergone degree has reduced or nil cervical lesions. There is a study<sup>[7]</sup> on Health literacy, thus concluded that low level of education affects women to seek colposcopy and their ignorance level is high, they are not aware of the screening procedures and thus positive results are high in low level of education.

In our study among 12.26% positive result, 7.26% belongs to low socio-economic class with income less than 2000. Income 2000-5000 the positive result is 4.52%. Only 0.48% belong to income strata more than 5000/- which showed positivity. Like the above fact, there was a study in Lahore 2007<sup>6</sup> showed that most women with positive lesion and those at higher risk of malignancy belong to very low socioeconomic class that is with income 3000-5000/-.

This study has an age distribution of positive lesions between 26-35 years. The similar study which was conducted in Lahore 2007<sup>6</sup> concluded that most women with CIN were between 35-45 years of age and also positive result in those who marry early and have their first intercourse before the age of 20. A study conducted by IARC<sup>8</sup>, a case control study on parity and HPV in cervical cancer, analyzed the association between number of full-term pregnancy and squamous cell carcinoma. The odds ratio for six full term pregnancy or more was 3.8 compared with nulliparous women and 2.2 compared with women with one or 2 full term pregnancy.

In our study, women who undergo permanent sterilization, had 10% of positive cases because since they have undergone sterilization, they have no fear of pregnancy and thus increased chances of cervical lesions. Barrier method has nil positive result in my study. There is still a discussion on the fact that Long term when the women uses OCP there are increased chance of cervical cancer, and regular use of condom has reduced risk of cervical lesions.<sup>9</sup>

In our study, it was found that all positive women were declared positive when the biopsy was done. Though there were some mishaps in negative value. So the positive predictive value was near complete but there was some lack in negative predicative value.

In our study, most of the positive biopsies were LSIL and these were treated. This study was correlated with the same type of study conducted in Lahore showed LSIL 4.2% and HSIL 1.9% and no invasive lesions.

## CONCLUSION

The incidence of cervical cancer has been on increasing trend in recent times and especially in India it is increasing in geometric proportion. This could be brought under control only by various accurate screening methods. Till few years ago, there was only conventional pap smear screening which was very difficult to perform and the interpretation was difficult. Thus, it didn't give the expected results. Hence the screening method of visual inspection methods came into action. This was very easy to perform and very useful for mass screening. The results are available readily so that the patients need not visit the health center twice. Thus, for low resource setting, VIA VILI is a great impact on the mass

screening. Thus, screening is done for all women who are sexually active.

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