

# VIA Vs Pap test- Is VIA Helpful for Peripheral Health Workers as Early Screening of Precancerous Lesions of Cervix among Women?

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## ABSTRACT

As per NICPR 1/4<sup>th</sup> of global burden of cancer cases belongs to India and projected that by 2025, 31000 women comes as new case and 18000 death due to cervical cancer every year. 70% of women will be screened in developed country where as only 5% of women will be screened in developing country which has become one of major source for increase in incidence of cervical cancer. Presently worldwide HPV has become primary source for cervical cancer. Many precancerous screening techniques are available, which are more effective in low resource setting. Because of lack of knowledge, unavailability of training and negative attitude and lack of skills in performing screening technique cervical cancer are not diagnosing at early stage. Tata memorial cancer center has expressed that Awareness on early detection of precancerous lesions of cervix by using simple screening technique like VIA or vinegar test and logo's iodine for women may reduces the incidence of cervical cancer. Visual inspection of acetic acid is direct visual inspection of cervix done with naked eye by using cervicoscopy or with low magnification called gynoscopy, aided VI or VIAM. It is concluded that VIA can be used as alternate screening test of cervical cancer as early detection of risk cases among women specially at peripheral area which only requires skilled person to perform considering of its utility, advantages, benefits and outcome result on spot with single visit, it can be proposed as a screening method in cervical cancer.

**Key word-** VIA, cervical cancer, screening, HPV, Precancerous lesion

## INTRODUCTION

As per National institute of cancer prevention and research [NICPR] India alone accounts for 1/4<sup>th</sup> of global burden of cervical cancer and 17% of deaths lies between the ages of 30 to 69 years. It represents that around 1 in 53 Indian women are diagnosing with cervical cancer. It is projected that by 2025, every year more than 31,000 women comes as a new cases each year and with death of 18,000 i.e. more often in among young women, who are raising children, caring for their children and contributing to the community. <sup>[1]</sup>

## Why cervical cancer incidences are increasing?

In developing country only 5% of women are screened per year, were as 70% of the women are screened in United States and Europe at least once in year if not screened in the same period. Presently worldwide HPV is becoming the primary cause for cervical cancer. <sup>[2]</sup>

## Complexity of Pap test

Presently two cervical cytology techniques are available i.e. conventional Pap smear and liquid based cytology. Which requires special care to avoid drying of cell or thin layer of cervical cell otherwise it

leads to poolside quality into false negative error. [3]

### **Is there any simple screening technique for cervical cancer?**

Tata memorial cancer center has expressed that Awareness on early detection of precancerous lesions of cervix by using simple screening technique like VIA or vinegar test and logo's iodine for women may reduces the incidence of cervical cancer.

### **VIA can be an effective screening process in low resource setting?**

Total 156 women were included in the study on naked eye on visual inspection with acetic acid as an alternative to cervical cytology as a screening test for diagnosis of cervical intraepithelial neoplasia, Where both pap smear and VIA has done for all patient ,the results revels that 31 women with positive Pap smear and 85 women with VIA positive. Later all 105 cases underwent cervical biopsy and histopathology the results shows that 52 were with CIN and cancer among that pap smear results were 24 cases and true VIA were 44 cases out of 52 cases. However study has expressed that simple VIA could be effective cervical screening in resource poor setting. [3]

### **Can VIA be an alternative screening technology for early detection of precancerous lesion among women in low resource setting?**

The study on Is PAP smear is abandoned compared with VIA for cervical screening. Where total 1706 women have undergone both Pap smear and VIA screening by local health care provider and trained nursing personal respectively. Women with positive PAP and VIA were offered colposcopy. The result shows that 9 Pap smear were positive, among that 3 were completed colposcopy and biopsy confirmed with dysplasia. In VIA 49 were abnormal. The accuracy of result was varied from Honduras and United states. At end it expresses that especially in developing country many of the organizations and charitable institution relay on Pap smear,

still it need alternative screening technology at low resource settings. [4]

### **Why VIA is not identified as alternative screening method?**

A cross section study on knowledge, attitude and practice towards VIA screening among 285 adult women expresses that lower level of education, lack of accessibility and non availability of service may be the reason for lack of practice. It concludes that a well designed awareness programme VIA screening can motivate the women to go for early detection of cervical cancer. [5]

A cross sectional study on knowledge about cervical cancer and Pap smear and the factors influencing the pap test screening among 355 women, the result reveals that inadequate knowledge was a important barrier for screening and also recommends that health education for through interdisciplinary approach may insist her to go for early screening of cervical cancer. [6]

### **How VIA is more effective than Pap test?**

A prospective analytical study on comparative study of effectiveness of Pap smear versus visual inspection with acetic acid and visual inspection with Lugal's for mass screening of premalignant and malignant lesion of cervix highlights that cancer of cervix has becoming leading cause in the globe, which needs to screened at early stage to reduce mortality and morbidity related to that. Total 210 reproductive patients were involved in the study. The subjects were undergone Pap smear fallowed with VIA, VILI, Coloscopy and biopsy for confirmation of lesion. The result tells that out of 210 subjects,34 had pap smear positive,29 VIA and 24 had VILI positive and 31 have showed features of CIN on colposcopy. After cervical biopsy among 48 subjects one had CIN-3, three had CIN-2, twelve had CIN-1, three had CIS and remaining reported as normal. It winds up that compare with Pap smear, VIA and VILI had sensitivity thus it is more potential screening test not only in poor setting even in

equipped center also. The combination of all procedure will be 100% accurate at low cost settings. [7]

### **How VIA can contribute in reducing of mortality due to cervical cancer?**

In the world cervical cancer among women has become second most common disease. Lack of screening programme in developing country has become major source for delay in early detection Ca of cervix. A comparative study between Pap smear and visual inspection with acetic acid [VIA] in screening of CIN and early cervical cancer explains that the new screening method VIA is most effective treatment at outpatient department in treating precancerous lesions with view of saving life of women in developing country. In this study 300 women with age of 18-60yrs were undergone both pap smear and VIA test, for positive case cervical biopsy and histopathological studies are done with testing sensitivity and specificity. 52 were positive by VIA, 22 by cytology and with histology 19 cases. The sensitivity of VIA WAS 89% against Pap, specificity was 87% versus to 95% and the accuracy was 87% of VIA with 93% of Pap smear. It concludes that effective treatment at early stage of Ca of cervix is only possible with effective screening program. [8]

### **Is VIA low cost than Pap test?**

Changes in lifestyle and demographic outlines are inviting various non communicable diseases in people residing in developing country where cancer is one among them and becoming into second most common gynecologic cancer worldwide. The main cause for high incidence of cervical cancer is lack of available resources, poorly organized health system. In account of this a cross sectional study was conducted on Can visual inspection with acetic acid be used as an alternative to Pap smear in screening cervical cancer?.. Around 200 women have been screened by VIA and Pap test and Colposcopy was done for all women with cervical biopsy for positive cases. The result predicts that 24 cases were positive by VIA

and 8 were abnormal result by Pap smear. For in Colposcopy 18 cases were negative [Reid score of 0-2] and 17 were positive [Reid 3-8].by cervical biopsy among 35 cases 44% of biopsy were positive and 56% were negative. Among positive cases 11 were mild, 2 were moderate and 1 was sever dysplasia and one carcinoma in situ. The sensitivity of pap was 50.1% versus VIA of 90%, simultaneously specificity of Pap 93.1% versus VIA is 37% with predicted positive value of Pap is 89% and negative value is 65.5% with VIA is 52% and 81% respectively. It concludes that VIA can be used as low cost, simple test and high sensitivity compare to Pap smear as an choose bal screening technique in low resource settings. [9]

As cervical cancer is leading as a highest mortality and morbidity among women the health care system has to find alternate and simple measures for early detection and specific treatment for cervical cancer especially in developing and underdeveloped country. A comparative cross section study was conducted on to find out the accuracy of Pap smear and VIA as cervical screening at tertiary hospital PIMS. Total 519 married women age of 19 to 51 were undergone for VIA and Pap smear. The distinct white area of via is considered as positive, cervical intra-epithelial neoplasia on cytology in Pap is considered as positive. The result reveals that total 70 were screened as positive and 29 were with positive for cervical epithelial neoplasia. Among 70, 26 were positive for via, 14 on cytology and 30 were on combined test. The sensitivity and specificity of via vs pap was 78.6%, 99.35 vs. 61.1% and 99.4% respectively. The predicted positive and negative value of VIA was 84,6%,98,65 vs. Pap test was 78.5% and 96,5% respectively. It concludes that VIA is significantly higher sensitivity than Pap smear .So combined test can be more accuracy and be used as opportunistic screening. [10]

How easy to perform VIA compare with Pap test cervical cancer has become one of the major causes of death not only in

developing country even in developed country like America. If is diagnosed at early which can be treated highly and effectively. But regrettably the effective screenings are not always available, were PAP smear is considered as Gold standard techniques for screening of cervical were it requires superior laboratory with highly skilled professionals. HPV test does not really diagnose the cancer but good in identifying the risk cases and becomes as a non-trivial expenses. That's why doctors have funded out cheapest, easiest and most effective test i.e. known as VIA. It allows them to visualize the lesions of cervix with direct necked eye and can find changes in large enough to provide effective and appropriate treatment.

Even the health care provider can perform this test at low resource setting and identify the precancerous lesions. This will be the initiation for the women to go for further confirmation test and specific treatment. Were as majority of the studies have found that VIA and VLI are less specific than Pap but more sensitive. It means VIA and VLI helps in detecting lesions at early stage but it might lead to false positive leading into false treatment. Instead of women to die with cervical cancer majority of the governments have adopted VIA as worthwhile trade-off test, which can contribute maximum in early identification of precancerous lesions, which can be confirmed with confirmation test and can put for specific treatment and can save thousands of lives of the women at low resource settings. <sup>[11]</sup>

### **Is VIA more beneficiary in mass screening as a primary screening tool for cervical cancer at peripheral health care setting?**

A cross section study on effectiveness of Pap test ,VIA and VILI for mass screening of premalignant and malignant lesions in 820 women with age of 30 to 60 explains that Pap was abnormal in 30,VIA in 70 and VILI in 74 in women respectively. The specificity, sensitivity,

positive , negative predicted and accuracy values are 98,32,97,40 and 95% for pap smear,95,89,99,49 and 95% for VIA and 95,95 ,100,49 and 95% in VILI respectively. It concludes that instead of Pap smear the VIA and VILI can be used as primary screening tool for cervical cancer at peripheral health care center. <sup>[12]</sup>

### **Good option for screening of cervical cancer at peripheral area.**

Cervical cancer is a preventable disease, unfortunately incidences of cervical cancer in developing and underdeveloped countries are increasing day by day due to lack of suitable screening curriculum and set up of poor organized resources.80% of cases in developing counties are untreatable when they are diagnosed at chronic stage. The Pap smear as become vital prevention programme which is very difficult to carryout in low socioeconomic setting because of unavailability of services. In such situation the government has to look for other modalities for screening which are easily accessible for early diagnosis of cervical cancer among women. Presently VIA and VILI tests are broadly used as alternate effective screening tests because they are simple, easy to carryout, less expensive and more feasible specially in developing countries and in poor resource settings. <sup>[13]</sup>

A comparative cross sectional study was conducted to assess the VIA and VILI cab be a alternative screening methods for cervical cancer. Total 1000 women with age of 18 to 61 underwent Pap, VIA and VILI test fallowed with Colposcopy. The result reveals that among 80 positive screening test 14 by pap test, 23 by VIA and 12 by VILI. The positive biopsy result was 11/14 among Pap, 21/23 in VIA and 8/11 in VILI. The sensitivity, specificity, positive predicted and negative predicted value of Pap was 78.57%,96.75%,75.12% and97.095 ,in VIA 91.30%,85.33%,40.11% and 98.50% respectively and VILI had 66.5%,91.32%,43.51% and 98,31% respectively. It conclude that through VIA and VILI precancerous and cancerous

lesions will be detected clearly in low setup locality. So this can be made as good option for screening of cervical cancer at our society. <sup>[14]</sup>

**Can VIA be potential to substitute as screening programme for Ca of cervix?**

Many of the epidemiological studies have highlighted that there are many number of risk factors contribute for cervical cancer among women like infection, early sexual intercourse, multiple sexual partner, long term contraceptive use and lack of personal hygiene. 12% of all cancerous in women is contributed by cervical cancer in worldwide having higher prevalence in developing countries and specially in southeast Asia. Many testing measures are available for cervical cancer. Whereas VIA or VILI does not require laboratory processing, provides immediate results and treatment can be suggested on same visit, simultaneously which requires standard quality services for specification of result. These screening tests are cost effective, acceptable, repeatable and valid. Many of the studies have shown and suggested that VIA and VILI can provide better result than pap smear so which can be potential to substitute as screening programme for cervical cancer in place of Pap test at low resource settings. <sup>[13]</sup>

The most common method which was used for screening of cervical cancer is Pap smear test. Whereas awareness on early detection of precancerous lesions of cervix by using simple screening technique like VIA, logo's iodine and vinegar test for women may reduces the high level incidence of cervical cancer.

A new screening method such as VIA, along with effective outpatient

treatment for precursor lesions, has great potential to save the lives of women in developing countries. Proper training is essential like cytology and quality control is important. Visual inspection of the cervix with acetic acid (VIA) is an effective, inexpensive screening test that can be combined with simple treatment procedures for early cervical lesions, provided by trained health workers.

**Visual inspection with acetic acid**

It is direct visual inspection of cervix done with naked eye by using cervicoscopy or with low magnification called gynoscropy, aided VI or VIAM. <sup>[15]</sup>

**How is VIA performed?**

**The health care providers perform**

- First vaginal speculum examination
- Applies dilute [3-5%] acetic acid [vinegar] to the cervix
- After one minute cervix will be screened through visualizing the cervix with naked eye for any changes in tissue in determination of test positive or negative possible precancerous lesions
- Provisionally the abnormal tissue when it exposed to AC or vinegar it will appear white



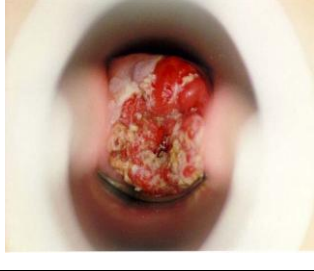
**Instruments necessary for VIA**

Which will already available in peripheral center like private exam room with examination table, trained health professionals, adequate light source, sterile vaginal speculum, surgical gloves, large cotton swabs, freshly prepared diluted [3-5%] acetic acid[vinegar] in a small bowl, 0.5% chlorine solution in container, plastic bucket with plastic bag and quality assurance system to maximize accuracy.

**RESULTS OF VIA**

Results	Clinical findings
Test Negative	No color changes and acetowhite lesions in cervix or dim acetowhite lesions; polyps, cervicitis, inflammation and Nabothian cyst
Test Positive	Well defined, distinct, sharp and dense [opaque/dull or oyster white] with or without raised margins of acetowhite lesions touching the squamocolumnar junction; warts and leukoplakia
Suspicious for cancer	Discharge and bleeding on touch, visible ulcerative cervix on clinical examination, cauliflower-like growth or ulcer

### Images guides for categorizing of VIA Test

Negative	Positive	Suspicious for cancer
		
Acetowhite area far from SCJ , not touching and insignificant.	Acetowhite area adjacent to SCJ and significant	Clinically Visible ulcerative lesions, bleeding, cauliflower-like growth

### Benefits of VIA

- Easy-to-learn, simple and effective in peripheral setup without consuming addition material
- Can carry out in less cost I.e. zero budget or less cost
- Immediate availability of test result.
- Need only one visit and consumes less time for procedure
- Easy to perform in peripheral area
- Any Health professionals of peripheral set up can carry out easily
- VIA screening Can be integrated at PHC for early detection of cervical cancer
- Helps for referring for confirmation of disease
- Offers to treat immediately

### Limitation of VIA

- Chances of unnecessary treatment for moderate specify result of single –visit approach
- In area with high prevalence of HIV there is no conclusive evidence regarding the health or cost implications of treatment.
- Requires standard training with quality assurance measures.
- Less accuracy in post-menopausal women. [15]

### VIA VS, Pap test

VIA	Pap test
Direct visualization of cervix through naked eye	Collection of smear
Skilled person can perform	Professional persons
Requires limited articles	Needs specific articles
Can carry in low resource setting	Well equipped laboratory
On spot result	Requires 2-3 days
Cost less test	200-500/-rs /test
Requires one visit	More than one visit

### CONCLUSION

For screening cervical cancer pap smear has become golden role every were, but many of the developing countries and less resource sitting health system do not have adequate resources like equipments, labs, professionals for implementation of cytology- based prevention. Whereas VIA can be used as alternate screening test of cervical cancer as early detection of risk cases among women specially at peripheral area which only requires skilled person to perform .considering of its utility, advantages ,benefits and outcome result on spot with single visit, it can be proposed as a screening method in cervical cancer.

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