

# Visual Inspection of the Cervix with (Acetic Acid or Lugol's Iodine) for Cervical Cancer Screening

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## Abstract

**Objective:** To assess the visual inspection with acetic acid (VIA) and Lugol's iodine (VILI) as alternative screening methods for cancer cervix.

**Materials and methods:** Comparative cross-sectional study was conducted on 1000 women with age range from 18 to 61 years were attending the obstetric and gynecology Department in Zagazig university hospital from January 2013 to October 2015. Each one was done Papanicolaou smear (PAP), visual inspection with 5% acetic acid (VIA) and with 5% Lugol's iodine (VILI). All women underwent Colposcopy. Analyse of the sensitivity, specificity and predictive values of the results using colposcopic directed biopsy as reference was done.

**Results:** From 80 positive screening tests by (either PAP, VIA, VILI or colposcopy). Pap smear was positive in 14/80 (17.5%), including 4 cases of atypical squamous cell with undetermined significance (ASCU), 4 cases of low grade squamous cell intraepithelial lesion (LSIL) and 5 cases of high grade squamous cell intraepithelial lesion (HSIL) and one case with malignant cells. Biopsy was positive in 11/14 of PAP smear. VIA accounted positive in 23/80 (28.7%) and VILI results were positive in 12/80. Biopsy was positive in 21/23 for VIA and 8/12 was positive for VILI, The positive predictive value 43.51% and negative predictive value of 98.31%.

Using both testes in matching improves the specificity of both to make them good options for screening of cancer cervix in this society.

**Keywords:** Cervical cancer; VIA; VILI; Colposcopy; Acetic acid; Lugol's iodine; Cervix; Screening.

## Introduction

Cervical cancer is a leading cause of cancer death among women in developing countries. In Egypt, the incidence of cervical cancer is increasing, and it is the second most common cancer among women. The most common type of cervical cancer is squamous cell carcinoma, which is caused by human papillomavirus (HPV) infection. Early detection and treatment of cervical cancer can significantly improve survival rates. The gold standard for cervical cancer screening is the Papanicolaou smear (PAP). However, PAP has a low sensitivity and specificity, and it is often difficult to interpret. Visual inspection with acetic acid (VIA) and Lugol's iodine (VILI) are alternative screening methods that are simple, inexpensive, and easy to perform. VIA involves the application of 5% acetic acid to the cervix, which causes abnormal cells to turn white. VILI involves the application of 5% Lugol's iodine to the cervix, which causes abnormal cells to turn brown. Both VIA and VILI are used to identify areas of abnormality that may require further investigation. Colposcopy is a procedure that uses a magnifying instrument called a colposcope to examine the cervix. It is often used to confirm the results of VIA or VILI. Biopsy is a procedure that involves taking a small sample of tissue from the cervix for microscopic examination. It is often used to confirm the results of colposcopy. The purpose of this study was to assess the sensitivity, specificity, and predictive values of VIA and VILI as alternative screening methods for cervical cancer. The study was conducted on 1000 women with age range from 18 to 61 years who were attending the obstetric and gynecology Department in Zagazig university hospital from January 2013 to October 2015. Each woman was screened with PAP, VIA, and VILI. All women underwent colposcopy. The results of the screening tests were compared with the results of colposcopy and biopsy. The sensitivity, specificity, and predictive values of VIA and VILI were calculated. The results of the study showed that VIA and VILI had a sensitivity of 28.7% and 12.5%, respectively. The specificity of VIA and VILI was 98.31%. The positive predictive value of VIA was 43.51% and the negative predictive value was 98.31%. The results of the study suggest that VIA and VILI are good options for cervical cancer screening in this society.

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 ( 91.30% 66.54% ) ( 85.33% , 91.32% )  
 ( 78.57% , 96.75% )  
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Parameter	Range	Mean
Age	18-61	35 ± 9.8 years
Parity	0-5	2.43 ± 1.2
Parameter	Number	Percentage %
Marital state		
Married	520	80%
Divorced	110	16.92 %
widow	20	3.08 %
Education level		
Not	390	60 %
Low	130	20 %
Medium	123	18.9 %
High	7	1.1%
Regularity of menstruation		
Regular	448	69 %
Irregular	61	9.4 %
menopause	140	21.6 %

Table 1: Sociodemographic data of screened women.

Complaint	Number (N)=650	Percentages (%)
Vaginal discharge	400	61.50%
Pruritis vulvae	180	27.70%
Back ack	210	32.30%
Lower abdominal pain	91	14%
Pain with sexual relation	15	2.30%
Abnormal vaginal bleeding	13	2%
Postcoital bleeding	8	1.23%

Table 2: Main complaints (%).

Findings by speculum examination	Number (N)=650	Percentage (%)
Looks normal	390	60%
Cervical erosion (ectropion)	234	36%
Cervicitis	123	18.90%
Hypertrophied cervix	97	14.90%
Unhealthy cervix	5	0.76%
Bleed on touch	7	1.07%
Suspicious cervix	3	0.46%

Table 3: Clinical findings of cervix by local examination (%).

Pap smear	Number (N) total=14/80	Percent total=17.5 % (%)
ASCUS	4	5%
LSIL	4	5 %
HSIL	5	6.25%
Malignant cells	1	1.25%

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### References

1. Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, et al. (2013) GLOBOCAN 2012. Cancer incidence and mortality worldwide. Lyon: International Agency for Research on Cancer. France.
2. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, et al. (2010) Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *Int J Cancer* 127: 2893-2917.
3. Denny L, Kuhn L,