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## **Diagnostic yield of pipelle biopsy in detection of endometrial carcinoma in patients with abnormal uterine bleeding**

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**Abstract**---Introduction: Endometrial carcinoma is the type of cancer of the female genital tract that occurs most frequently. Pipelle is an excellent method for screening and diagnostic purposes and has a high degree of sensitivity and specificity for the detection of endometrial carcinoma. Objective: To determine the diagnostic yield of pipelle biopsy in detection of endometrial carcinoma in patients with abnormal uterine bleeding. Methodology: The current cross-sectional (Descriptive) study was carried out at the Department of Obstetrics & Gynecology in Khyber Teaching Hospital, Peshawar. The study duration was one years from December 2021 to December 2022. From all of the women who fulfilled the inclusion criteria, biopsy were performed on an outpatient basis. Performa developed for this study was used to record all the data. SPSS version 17.0 was used to input the data and evaluate the results. Results: A total of 107 women presenting with abnormal uterine bleeding were included in the study. Average age of the patients was 54.52 years with standard deviation of  $\pm 8.16$ . The Diagnostic yield in patients with abnormal uterine bleeding was observed in 99(92.52%). Conclusion: Our research shows that pipelle is a good device for diagnosing carcinoma in patients with abnormal uterine bleeding.

**Keywords**---Diagnostic yield, pipelle biopsy, abnormal uterine bleeding, endometrial carcinoma.

## **Introduction**

Over seventy percent of all gynecological appointments occur during the peri and postmenopausal years due to abnormal uterine bleeding (1-3). It is estimated that roughly 10% of women develop endometrial cancer after experiencing abnormal perimenopausal or postmenopausal bleeding (PMB) (4). In the United Kingdom, endometrial carcinoma is the type of cancer of the female genital tract that occurs most frequently. The chance of developing this malignancy is raised by any factor that results in increased interaction with unopposed oestrogen (5, 6).

There were 320,000 new instances of endometrial cancer detected in 2012, making it the 6th most frequent form of cancer in women globally and the fourteenth most common form of cancer overall (7-9). As a result of the fact that endometrial cancer tends to develop symptoms at very early stages, the illness is often detected at an early stage. In general the 5-year survival rate is comparatively high, and it is greater in nations with high incomes. For instance, in the US, the overall 5-year relative survival rate for endometrial cancer cases is around 69% (this statistic compared the 5-year survival of persons with cancer to the survival of those the same age who do not have cancer). The majority of instances of endometrial cancer are identified at an early stage, which results in a survival rate of more than 91 percent after five years (10, 11). It is appropriate to screen high-risk women for endometrial cancer or its precursor, hyperplasia (1, 12, 13).

In the examination of abnormal bleeding, pipelle endometrial sample has recently supplanted D&C as the primary diagnostic test due to the fact that both procedures have been found to have comparable levels of accuracy (14). Evaluation of the uterine endometrium may be performed using endometrial biopsy (EB), which is a procedure that is risk-free, quick, and economical. This procedure is often associated with very little pain and may be completed quickly in an outpatient environment. In the majority of instances, it is administered to women who are either perimenopausal or postmenopausal so that abnormal uterine bleeding may be evaluated and an endometrial cancer diagnosis can be ruled out. It also detects additional variations in the uterine lining that are caused by hormone stimulation (15). The pipelle makes it possible to take a sample of the endometrium in a short amount of time (between 5 and 15 seconds), and the whole procedure may be finished in between 10 and 15 minutes (16). Pipelle is an excellent method for screening and diagnostic purposes and has a high degree of sensitivity and specificity for the detection of endometrial carcinoma. A study done by Akhtar AZ et al. on pipelle showed acceptable findings in about 77% cases. The pipelle has 100% sensitivity 99% specificity in diagnosing endometrial cancer (14). This study is intended to find out the occurrence of endometrial carcinoma in abnormal uterine bleeding patients who are peri and post menopause. Pipelle endometrial sampler will help in reducing the cost of the diagnostic work-up for abnormal uterine bleeding without reducing accuracy, especially in diagnosing endometrial carcinoma.

## Materials and Methods

The current cross-sectional (Descriptive) study was carried out at the Department of Obstetrics & Gynecology in Khyber Teaching Hospital, Peshawar. The study duration was one years from December 2021 to December 2022. Sample size calculated by using the WHO calculator was 107 by taking Confidence Level = 95%, Prevalence of adequacy of pipelle biopsy=77%(14) Margin of error= 8%.

### Inclusion criteria:

- All patients with abnormal uterine bleeding in age 40 to 70.
- Those with premenopausal bleeding (non-responsive to hormonal treatment)
- Patients with postmenopausal bleeding.

### Exclusion criteria:

- Patients having abnormal uterine bleeding due to other causes e.g. fibroids, polyps, bleeding diathesis.
- Patients with pregnancy related bleeding are to be excluded.
- Patients with genital tract infections and those with cervical stenosis will be excluded from study

### Data collection procedure

After receiving approval from the hospital's research and ethics committee, the research was carried out. All of the women who fulfilled the inclusion criteria and went to the gynae OPD complaining of abnormal bleeding from the uterus were given an invitation to take part in the research, and a biopsy were performed on an outpatient basis. The participants in the study were given an explanation of the research's goal, and their signed informed consent was acquired. Each woman had her medical history taken, was examined thoroughly, and had a series of common diagnostic tests, including a pelvic ultrasound. To assess the typical maternal outcomes, each woman was monitored under the direction of an experienced CPSP gynecologist fellow. Performa developed for this study was used to record all the data.

### Data analysis

SPSS version 17.0 was used to input the data and evaluate the results. We calculated the mean as well as the standard deviation for several factors like age and parity. The variables like prevalence of endometrial cancer and gender was determined by the use of frequency and percentages. Age-related stratification of endometrial cancer was done to see how the effect varied. The chi-square test was used to do post-stratification, and a P value of 0.05 or below was taken to be statistically significant.

### Results

A total of 107 women presenting with abnormal uterine bleeding were observed and included in the study. Average age of the patients was 54.52 years+8.16SD with range 40-70 years. Patient's age was divided in four categories, out of which most common age group for patients of abnormal uterine bleeding was 56-65

years. There were 18(16.8%) patients were of the age <45 years. Twenty Eight (26.2%) patients were 46-55 years, 46 (43%) were 56-65 years and 15(14%) presented at age >65 years of age. (Table 1)

Diagnostic yield wise distribution of accuracy of biopsy in detection of endometrial carcinoma in patients with abnormal uterine bleeding was observed in 99(92.52%) patients while in 8(7.480%) patients were fail to found accuracy. (Figure 1)

Age wise distribution of diagnostic yield among women presented with abnormal uterine bleeding shows that diagnostic yield have no role over age ( $p=0.898$ ). The patients with age  $\leq 45$  years of age have 94.4% diagnostic yield while 5.6% no diagnostic yield, age group 46-55 years contain 89.3% diagnostic yield and 10.7% demonstrates no diagnostic yield, 56-65 years age groups gave 93.5% diagnostic yield with 6.5% no diagnostic yield and patients with  $> 65$  years of age have 93.3% diagnostic yield while 6.7% have non diagnostic yield in patients presented with abnormal uterine bleeding. (Table 2)

Table no: 1 age wise distribution of the patients

Age groups	Frequency (%)
$\leq 45.00$	18(16.8%)
46.00 - 55.00	28(26.2%)
56.00 - 65.00	46(43.0%)
$>66.00$	15(14.0%)
Total	107

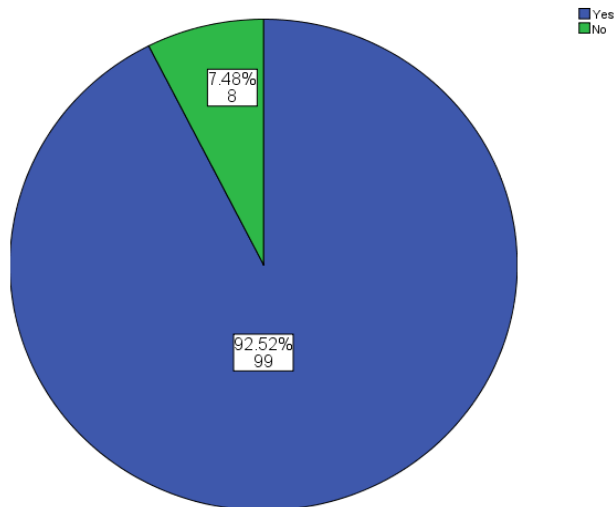


Figure 1: diagnostic yield in patients with abnormal uterine bleeding

Table no 2: age wise distribution of diagnostic yield

age (in years)	Sub group	Diagnostic yield		Total	P-value
		Yes	No		
	≤45.00	17	1	18	0.898
		94.4%	5.6%	100.0%	
	46.00 - 55.00	25	3	28	
		89.3%	10.7%	100.0%	
	56.00 - 65.00	43	3	46	
93.5%		6.5%	100.0%		
>66.00	14	1	15		
	93.3%	6.7%	100.0%		
Total		99	8	107	
		92.5%	7.5%	100.0%	

## Discussion

Endometrial cancer is often diagnosed when examining irregular vaginal bleeding. Approximately 75% of endometrial malignancies are identified at an early stage due to this symptom. In around 10% of instances, abnormal perimenopausal or postmenopausal bleeding is linked to endometrial cancer (73).

Over the last ten years, a number of devices have been devised to be used as cheaper, safer, and more convenient alternatives to fractional D&C. Commonly used instruments include the Pipelle and comparable ones like the Pipette, Tis-U-Trap, and Z-sampler. The sensitivity for finding endometrial cancer with these tools varies from 67-96 % (74-76). In the current research, a total of 107 women presenting with abnormal uterine bleeding were observed. Diagnostic yield wise distribution of accuracy of biopsy in detection of endometrial carcinoma in patients with abnormal uterine bleeding was observed in 99(92.52%) patients while in 8(7.480%) patients were fail to found accuracy. In accordance with our study, another study piloted by Bushera S Z et al. reported similar results. They reported accuracy of 96.82% (17). In 39 (93%) of the instances, the results of endometrial biopsies were found to be in agreement with the histological findings of the hysterectomy specimen (18). Pipelle Endometrial Sampling (PES) has an accuracy of 98%, for the diagnosis of endometrial carcinoma (15). Another local investigation found that the sensitivity of PES is 100% and 77%, accordingly, for the diagnosis of endometrial hyperplasia and carcinoma (19). These findings are comparable to those of a research by Stocxet al.(20), which shown that Pipele has a sensitivity range of 83-96% for detecting endometrial cancer.

Age wise distribution of diagnostic yield among women presented with abnormal uterine bleeding shows that diagnostic yield have no role over age ( $p=0.898$ ). The patients with age ≤45 years of age have 94.4% diagnostic yield while 5.6% no diagnostic yield, age group 46-55 years contain 89.3% diagnostic yield and 10.7% demonstrates no diagnostic yield, 56-65 years age groups gave 93.5% diagnostic yield with 6.5% no diagnostic yield and patients with > 65 years of age have

93.3% diagnostic yield while 6.7% have non diagnostic yield in patients presented with abnormal uterine bleeding.

It has been stated that the Pipelle is less painful than the Novak curettage and the Vabra aspiration with maintaining diagnostic accuracy (21-23). When compared to hysterectomy specimens, all of these devices ("the Vabra aspirator, the Novak biopsy curette, and the Pipelle") exhibit low rates of false-negative and inadequate tissue findings for the diagnosis of endometrial abnormalities (24-26). According to a research by Huang et al., Pipelle biopsies were 93% sensitive to identifying low-grade malignancies and 99.2% sensitive to detecting high-grade cancers (27). The pipelle was shown to have a diagnostic value for endometrial cancer in this study. The outcomes of pipelle and D&C in detecting endometrial disease were similar, according to other research (18, 28, 29). For the identification of endometrial cancer and atypical hyperplasia, Mechado et al. showed 96.9% accuracy (30). For the identification of endometrial cancer and atypical hyperplasia, the pipelle has been deemed superior to conventional endometrial sampling methods (16). Although instances of endometrial cancer were later found on poor specimens of pipelle (31), accuracy is elevated when a suitable endometrial sample is acquired.

## **Conclusion**

Our research shows that, when compared to benign illness, the pipelle is a useful tool for identifying malignancy and hyperplasia, both with and without atypia. Endometrial hyperplasia and intrauterine structural pathology detection accuracy is poor. Therefore, further endometrial evaluation should be carried out, particularly if symptoms continue or intrauterine structural abnormalities are suspected, using an outpatient hysteroscopy and/or tranvaginal ultrasonography. Other methods of collecting an endometrial sample should be used if the outpatient biopsy is technically unsuccessful.

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