

## Assessment of Postmenopausal Bleeding Using Diagnostic Hysteroscopy

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### ABSTRACT

**Background:** Postmenopausal bleeding (PMB) is an alarming symptom because it may indicate underlying endometrial pathology, including endometrial carcinoma. Diagnostic hysteroscopy allows direct visualization of the uterine cavity and targeted biopsy. **Methods & Materials:** This cross-sectional observational study was conducted in the Department of Gynecological Oncology at Bangabandhu Sheikh Mujib Medical University from November 2021 to October 2022. A total of 50 women with PMB attending inpatient and outpatient departments were selected by purposive sampling. All patients underwent clinical evaluation, transvaginal sonography (TVS), diagnostic hysteroscopy and histopathological examination (HPE). Hysteroscopic findings were compared with histopathological diagnosis. **Results:** Most patients (36.0%) were aged 51–55 years and 76.0% were housewives. Hypertension and diabetes mellitus were present in 40.0% and 30.0% of patients, respectively. TVS showed thickened endometrium in 46.0% cases. On hysteroscopy, endometrial hyperplasia was the most common finding (28.0%), followed by atrophic endometrium (26.0%) and endometrial polyp (20.0%). Histopathology also revealed endometrial hyperplasia as the predominant diagnosis (26.0%). Concordance between hysteroscopy and histopathology was 92.8% for endometrial hyperplasia, 92.3% for atrophic endometrium, 90.0% for endometrial polyp, 100% for submucous fibroid and 85.7% for endometrial carcinoma. **Conclusion:** Diagnostic hysteroscopy showed a good correlation with histopathological findings in evaluating PMB. It is a valuable tool for detecting focal intrauterine lesions and guiding appropriate management.

**Keywords:** Postmenopausal bleeding, diagnostic hysteroscopy, histopathology, endometrial hyperplasia, endometrial carcinoma.

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### INTRODUCTION

Postmenopausal bleeding (PMB) is defined as vaginal bleeding occurring after one year of permanent cessation of menstruation, irrespective of its amount or duration. A woman is considered menopausal after 12 months of amenorrhea, with the average age of menopause in Asian women being 46 years, ranging from 45 to 58 years. Any uterine bleeding during this period is considered an alarming symptom and requires careful evaluation, as it may be the sole presenting feature of endometrial carcinoma at a potentially curable stage. Endometrial carcinoma is most commonly seen in the sixth and seventh decades of life, with approximately 80% of cases occurring between 50 and 65 years of age [1]. The prevalence of endometrial carcinoma among women with PMB is reported to be over 3%, while the incidence ranges from 2% to 3% [2,3]. However, PMB is not exclusively associated with malignancy, as benign conditions are more common. The causes include atrophic

endometritis (30%), exogenous estrogen (30%), endometrial cancer (15%), endometrial hyperplasia (5%), endometrial polyp (10%) and miscellaneous causes such as cervical cancer, uterine sarcoma, urethral caruncle and trauma (10%) [4]. Risk factors such as hypertension, diabetes mellitus and obesity are also associated with endometrial hyperplasia and carcinoma. Evaluation of PMB includes detailed history, clinical examination and both non-invasive and invasive investigations. Transvaginal sonography (TVS) is commonly used as an initial modality to assess endometrial thickness, with a cutoff value of 5 mm in postmenopausal women [5]. It also helps evaluate adnexal regions to exclude extrauterine pathology. For definitive assessment of endometrial pathology, hysteroscopy with directed biopsy is considered a gold standard technique. However, due to its invasiveness, cost and availability issues, TVS and endometrial sampling by curettage are often used as first-line

investigations [2]. Despite this, fractional curettage may miss focal intrauterine lesions, even in cases of endometrial cancer with endometrial thickness <4 mm. Hysteroscopy allows direct panoramic visualization of the uterine cavity and helps identify focal lesions. Normal findings include proliferative, secretory, or atrophic endometrium, while abnormal findings include polyps, submucous fibroids, endometritis, hyperplasia and carcinoma [5]. Hysteroscopic features of hyperplasia include diffuse thickening, irregular surface and cystic changes, whereas carcinoma may present with atypical vessels, necrotic friable tissue and irregular vascular patterns. In addition, hysteroscopy allows simultaneous treatment of benign lesions such as polyps and fibroids [6]. Compared to fractional curettage, hysteroscopy is minimally invasive, offers shorter hospital stay, faster recovery and allows direct visualization and targeted biopsy [7]. However, fractional curettage has traditionally been considered standard but

may miss focal lesions due to its blind nature [8].

Several studies have demonstrated high diagnostic accuracy of hysteroscopy in PMB, with Tandulwadkar et al., reporting sensitivity of 100% for hyperplasia, polyps and fibroids and 87.5% for carcinoma [6]. In Bangladesh, limited studies have evaluated its diagnostic role, highlighting the need for further research.

Therefore, this study aims to evaluate the role of diagnostic hysteroscopy in PMB by correlating hysteroscopic findings with histopathological diagnosis, which remains the gold standard for definitive diagnosis.

**METHODS & MATERIALS**

This cross-sectional observational study was conducted in the Department of Gynecological Oncology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, over a period of one year from November 2021 to October 2022 after approval from the Institutional Review Board (IRB). A total of 50 women presenting with postmenopausal bleeding attending both inpatient and outpatient departments were included in the study

using a non-random purposive sampling technique based on predefined inclusion and exclusion criteria. Women aged 45–75 years with postmenopausal bleeding were included, while those receiving hormone replacement therapy, having obvious cervical or vaginal causes of bleeding, on anticoagulant therapy, having surgical menopause, or showing adnexal pathology on transvaginal sonography were excluded.

After obtaining informed written consent, detailed history taking and clinical examination including per vaginal examination were performed to exclude local genital tract causes of bleeding. All participants were assessed for fitness for general anesthesia. Diagnostic hysteroscopy was performed under general anesthesia using a 3.5 mm hysteroscope with continuous irrigation and normal saline as distension medium and the entire uterine cavity was systematically evaluated. Hysteroscopic findings were recorded and directed biopsies were taken from suspicious lesions and polyps or submucous fibroids were removed when present. Following hysteroscopy, fractional

curettage was performed and all collected tissue samples were preserved in 10% formalin and sent for histopathological examination.

Data were collected using a pre-designed and pre-tested proforma through interview, clinical examination, transvaginal sonography, hysteroscopic findings and histopathological reports. Data were checked, coded and entered into a computer for analysis using Statistical Package for Social Sciences (SPSS) version 26. Confidentiality and anonymity of patients were strictly maintained throughout the study.

**RESULTS**

Table I shows the socio-demographic characteristics of the 50 study patients with postmenopausal bleeding. The majority (36.0%) were aged 51–55 years, followed by 26.0% in the 45–50 age group. Regarding education, 34.0% had completed SSC, while 26.0% were illiterate. The vast majority of the participants were housewives (76.0%), with the remaining 24.0% engaged in service occupations.

**Table I**  
Socio-demographic Characteristics of Study Patients (n=50).

Variables	Category	Frequency (n)	Percentage (%)
Age (years)	45–50	13	26.0
	51–55	18	36.0
	56–60	9	18.0
	>60	10	20.0
Education	Illiterate	13	26.0
	SSC	17	34.0
	HSC	12	24.0
	Graduate+	8	16.0
Occupation	Housewife	38	76.0
	Service	12	24.0

Table II presents the socioeconomic status of the study patients. Regarding monthly income, the largest group (38.0%) earned between 5,000–10,000 Taka, followed by

32.0% earning 10,000–20,000 Taka. Only 14.0% had a monthly income below 5,000 Taka, while 16.0% earned above 20,000 Taka. In terms of residence, the majority

(56.0%) lived in urban areas, compared to 44.0% from rural areas.

**Table II**  
Socioeconomic Status of Study Patients (n=50).

Variables	Category	Frequency (n)	Percentage (%)
Monthly Income (Taka)	<5,000	7	14.0
	5,000–10,000	19	38.0
	10,000–20,000	16	32.0
	>20,000	8	16.0
Residence	Urban	28	56.0
	Rural	22	44.0

Table III summarizes the reproductive and menstrual history of the 50 study patients. The mean age at marriage was 18.2 ± 3.4 years, with a mean duration of marriage of

33.5 ± 8.1 years. Regarding parity, the majority (40.0%) had 2–3 children, followed by 36.0% with 4–5 children; equal proportions (12.0% each) had 0–1

child or 6 or more children. The mean age at menopause was 49.1 ± 4.2 years and the mean duration of menopause was 7.8 ± 5.1 years.

**Table III**  
Reproductive & Menstrual History (n=50).

Variables	Mean ± SD / Category	Frequency (n)	Percentage (%)
Age at Marriage		18.2 ± 3.4 years	
Duration of Marriage		33.5 ± 8.1 years	
Parity	P0-1	6	12.0
	P2-3	20	40.0
	P4-5	18	36.0
	≥6	6	12.0
Age at Menopause		49.1 ± 4.2 years	
Duration of Menopause		7.8 ± 5.1 years	

Table IV presents the clinical and investigative findings of the study patients. Regarding BMI, the majority (42.0%) were overweight, followed by 36.0% with normal BMI and 22.0% who were obese.

Hypertension was present in 40.0% of patients, while diabetes mellitus was present in 30.0%. On transvaginal sonography (TVS), the most common finding was thickened endometrium

(46.0%), followed by atrophic endometrium (22.0%), polyp (20.0%) and fibroid uterus (12.0%).

**Table IV**  
Clinical & Investigative Findings (n=50).

Variables	Findings	Frequency (n)	Percentage (%)
BMI	Normal	18	36.0
	Overweight	21	42.0
	Obese	11	22.0
Hypertension	Present	20	40.0
Diabetes Mellitus	Present	15	30.0
	Thick endometrium	23	46.0
TVS Findings	Polyp	10	20.0
	Fibroid uterus	6	12.0
	Atrophic endometrium	11	22.0

Table V compares hysteroscopic findings with histopathological examination (HPE) as the gold standard. Hysteroscopy diagnosed atrophic endometrium in 13 patients (26.0%) versus 12 (24.0%) on HPE, with a concordance of 92.3%. Endometrial hyperplasia was noted in 14

(28.0%) by hysteroscopy and 13 (26.0%) by HPE, showing 92.8% concordance. Endometrial polyp was detected in 10 (20.0%) by hysteroscopy compared to 9 (18.0%) by HPE (concordance 90.0%), while submucous fibroid showed 100% concordance (4 cases each). Endometrial

carcinoma was diagnosed in 7 (14.0%) by hysteroscopy versus 6 (12.0%) on HPE (concordance 85.7%). The lowest concordance (66.6%) was observed for normal endometrium, where hysteroscopy identified only 2 cases (4.0%) compared to 6 cases (12.0%) on histopathology.

**Table V**  
Comparison of Hysteroscopy and Histopathology Findings (n=50).

Diagnosis	Hysteroscopy n (%)	Histopathology n (%)	Concordance (%)
Atrophic endometrium	13 (26.0)	12 (24.0)	92.3
Endometrial hyperplasia	14 (28.0)	13 (26.0)	92.8
Endometrial polyp	10 (20.0)	9 (18.0)	90.0
Submucous fibroid	4 (8.0)	4 (8.0)	100
Endometrial carcinoma	7 (14.0)	6 (12.0)	85.7
Normal endometrium	2 (4.0)	6 (12.0)	66.6

**DISCUSSION**

In this study, the majority of women presenting with postmenopausal bleeding (PMB) were in the age group of 51-55 years (36.0%), which is consistent with the known peak incidence of PMB in the early postmenopausal period. Similar findings were reported by Vasudeva et al. and Cheney et al., who observed that most cases of PMB occur in the fifth to sixth decade of life [9,10]. This reflects the increased incidence of endometrial pathology during early postmenopausal years.

Regarding socio-demographic characteristics, most patients in the present study were housewives (76.0%) with low to middle socioeconomic status. Similar observations were reported by Begum et al., where a predominance of housewives and low-income groups was noted among PMB patients in Bangladesh [11]. This may be associated with limited health awareness and delayed presentation in developing countries.

In the present study, hypertension (40.0%) and diabetes mellitus (30.0%) were common comorbidities. These findings are comparable with studies by AbdelHameed

et al. and Black, who highlighted metabolic disorders such as hypertension, diabetes and obesity as significant risk factors for endometrial hyperplasia and carcinoma due to unopposed estrogen effect [12,13]. Transvaginal sonography (TVS) in this study showed thickened endometrium in 46.0% of cases, followed by polyps (20.0%) and fibroid uterus (12.0%). Similar findings were observed by Gupta and Ramanathan, as well as Tuersun and Zhang, where endometrial thickening was the most common sonographic abnormality in PMB patients [14,15]. However, TVS alone may miss focal lesions, as

highlighted by Hurtado and Shetty, emphasizing its limited specificity <sup>[16]</sup>.

In hysteroscopic evaluation, endometrial hyperplasia (28.0%) was the most common finding, followed by atrophic endometrium (26.0%) and polyps (20.0%). These results are comparable with Amin KM and Barmade et al., who also reported hyperplasia and atrophic changes as frequent hysteroscopic findings in PMB cases <sup>[17,18]</sup>. Vitale et al. further emphasized that hysteroscopy provides superior visualization of focal intrauterine lesions and improves diagnostic accuracy compared to blind sampling methods <sup>[19]</sup>.

Histopathological examination in this study revealed endometrial hyperplasia (26.0%) as the most common diagnosis, followed by atrophic endometrium (24.0%) and polyps (18.0%). Similar trends were reported by Shukla and Durga and Khanum et al., where benign endometrial conditions were more prevalent than malignant lesions in PMB patients <sup>[20,21]</sup>.

The present study demonstrated high concordance between hysteroscopy and histopathology, with 92.3% agreement for atrophic endometrium, 92.8% for endometrial hyperplasia, 90.0% for polyps and 85.7% for endometrial carcinoma. These findings are consistent with ÇİÇEK et al., who reported strong correlation between hysteroscopic and histopathological diagnosis in PMB cases <sup>[22]</sup>. Similarly, Ashmawy et al., also demonstrated high diagnostic accuracy of hysteroscopy when compared with histopathology <sup>[23]</sup>.

In the current study, submucous fibroid showed 100% concordance, indicating excellent diagnostic accuracy of hysteroscopy for structural lesions. However, lower concordance was observed for normal endometrium (66.6%), where hysteroscopy underestimated cases compared to histopathology. This limitation is also supported by Komy et al., who reported that blind or visually normal hysteroscopic findings may still harbor microscopic pathology on histology <sup>[24]</sup>.

Overall, the present study findings support that diagnostic hysteroscopy is a highly effective tool in evaluating PMB and it provides better detection of focal intrauterine lesions compared to TVS and fractional curettage. These findings are in agreement with Latha et al. and Changede and Wade, who described hysteroscopy as both a diagnostic and therapeutic modality in perimenopausal and postmenopausal women <sup>[25,26]</sup>.

However, despite its advantages, hysteroscopy should always be complemented with histopathological examination, as emphasized by several authors including Gupta and Ramanathan and Shukla et al., since histopathology remains the gold standard for definitive diagnosis <sup>[14,20]</sup>.

#### LIMITATIONS

This study was conducted with a relatively small sample size of 50 patients from a single tertiary care hospital, which may limit the generalizability of the findings to the wider population. Being a cross-sectional study, it also provides only a snapshot of the diagnostic correlation without long-term follow-up. In addition, purposive sampling may introduce selection bias and the results depend on operator expertise in performing and interpreting hysteroscopy.

#### CONCLUSION

Diagnostic hysteroscopy is a highly effective and reliable tool in the evaluation of postmenopausal bleeding, showing good correlation with histopathological findings. It allows direct visualization of the endometrial cavity, improves detection of focal lesions. However, histopathological examination remains the gold standard and both procedures should be used complementarily for accurate diagnosis and optimal patient management.

#### FUNDING

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#### CONFLICTS OF INTEREST

There are no conflicts of interest.

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