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The Role of Hysteroscopy in Evaluating Postmenopausal Women with Thickened Endometrium

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Abstract

Postmenopausal bleeding (PMB) is a frequent and abnormal presentation of the end of menses (menopause) which is defined as the permanent cessation of menstruation confirmed following 12 consecutive months of amenorrhea. Postmenopause bleeding, although usually caused by genital atrophy, may indicate endometrial cancer and should not be ignored, and should be investigated promptly by ultrasound and biopsy. Management relies upon cause and good collaborative care enhances the result. Objective to investigate the value of hysteroscope in postmenopausal women with thickened endometrium. This study is proretrospective study which was carried out in Basra Maternity and Child Hospital (2022-2025) 67 menopausal women aged (48-75) years with endometrial thickness >5 mm. The population was divided into two group, with the first 35 patient (Group A) being asymptomatic thickened endometrium and the second group being patients with history of uterine bleeding (symptomatic) with increased endometrium thickness (Group B) 32 patients. All were clinically evaluated, transvaginal ultrasound, office hysteroscopy (vaginoscopic method) under paracervical block was performed and then endometrial biopsy was performed. Hysteroscopic assessment revealed normal, atrophic, hyperplastic, polypoid, myomatous or suspicious malignant endometrium and histopathology confirmed the diagnosis for each group. Inthis study there were 35b postmenopausal women with thickened endometrium who were asymptomatic and 32 with bleeding. Endometrial thickness >12 mm was significantly higher in group B, and hysteroscopy revealed the presence of endometrial polyps as the most frequent lesion in both groups, but suspicion of malignancy was significantly higher in the symptomatic women (6.9% vs. 2.8%). In histopathology specimens, polyps and hyperplasia were more frequently observed in Group B and all three of the endometrial carcinomas were found in symptomatic women. Hysteroscopy had a high diagnostic accuracy with sensitivity of 96.9 % for normal endometrium and good performance in the detection of polyps and hyperplasia. There is a strong association between postmenopausal bleeding and endometrial pathology. Hysteroscopy is extremely accurate and polyps, and hyperplasia, are common findings. Histopathology is still required, and for women with asymptomatic thickening who have been incidentally found, risk evaluation is required to prevent unnecessary invasive procedures.

Keywords: Hysteroscopy; Postmenopausal Women; Endometrial Thickening; Endometrial Biopsy; Endometrial Pathology;

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Introduction

Menopause is characterized by the permanent absence of menstruation after 12 months of amenorrhea, and typically happens at about 51 years of age [1]. Post-menopausal vaginal bleeding is abnormal and is a frequent gynecologic consultation [2]. While the most common causes of postmenopausal bleeding are endometrial and genital tract atrophy, it can be caused by endometrial polyps, endometrial hyperplasia, submucosal fibroids, hormonal therapy or malignancy [3].

Postmenopausal bleeding is a clinically important issue as over 90% of women with endometrial cancer present with vaginal bleeding [4]. Age and other factors such as obesity, diabetes mellitus, hypertension, nulliparity, late menopause and exposure to unopposed estrogen are risk factors for malignancy. Hence, all cases of post menopausal bleeding should be investigated promptly to rule out premalignant and malignant endometrial lesion [5].

Transvaginal ultrasonography is the most frequent initial investigation for measurement of endometrial thickness. Endometrial thickness is ≤4 mm is associated with low probability of endometrial cancer [6]. But ultrasonography is not a reliable method to distinguish between benign, premalignant, and malignant conditions, and it might miss focal lesions like polyps or focal hyperplasia [7].

Hysteroscopy permits visualization of the uterine cavity and targeted biopsy of suspicious lesions [8]. It has the benefit over blind endometrial sampling in better identification of focal abnormalities and may be able to diagnose and treat at the same time [9]. In the postmenopausal population, hysteroscopy is safe, well tolerated and can be used as an outpatient procedure with modern small-diameter instruments [10].

The purpose of this study was to see the role of hysteroscopy in post-menopausal women with thickened endometrium and to assess its usefulness in the detection of underlying endometrial abnormality.

Patients and Methods

The study was a prospective–retrospective one carried out in the Maternity and Child Hospital in Basra, Iraq from 2022 to 2025. It comprised of 67 postmenopausal females with age range of 48-75 years. Menopause was determined as the spontaneous absence of menstruation for 12 months or more after 48 years of age. Each of these participants had their medical history documented including diabetes mellitus, obesity and hypertension.

Women eligible for the study included those who were over one year postmenopausal and had no prior history of hormone replacement therapy or genital tract cancer and had undergone transvaginal ultrasonography (TVS) with a measured thickness of the endometrium exceeding 5 mm. The groups were split into two groups (Group A: 35 women without uterine bleeding and with a thickened endometrium; Group B: 32 women with a thickened endometrium and postmenopausal uterine bleeding).

All participants had TVS for the measurement of endometrial thickness. The greatest distance between the two endometrial–myometrial interfaces, representing the double-layer distance, was measured on the sagittal view. Endometrial thickness > 5mm was taken as indicative of endometrial pathology.

All the participants underwent a thorough clinical history taking and physical examination. In all women, office hysteroscopy was then performed with a paracervical block of lidocaine and an endometrial biopsy was taken for pathological evaluation. All the hysteroscopic procedures were performed by the same operator.

Hysteroscopy was carried out with a 3 or 5 mm hysteroscope (with 30° viewing angle) by a vagina-scope without a speculum. Isotonic sodium chloride solution was used as the distension medium at a pressure of 50–70 mmHg. The examination involved panoramic observation of the cavity of the uterus, examination of both the tubal ostia and the examination of the cervical canal during hysteroscope withdrawal [11,12].

The hysteroscopic results were classified as normal, hyperplastic, atrophic, malignant, endometrial polyp, or submucosal fibroid. Normal endometrium was pink/normal, thick and undulating, and orange. Hyperplastic endometrium was thick, irregular, undulating, or edematous while atrophic endometrium was thin, flat, pale, fragile and/or had petechial hemorrhage. If tissue was hypervascular, edematous, hemorrhagic or ulcerated, then endometrial cancer was suspected. Endometrial polyps were observed as soft, oval shaped, pink, pedunculated and submucosal fibroids as firm round white, pedunculated or partially intramural.

All biopsy specimens were examined histopathologically. The relevant findings of the ultrasonography and the hysteroscopy were called to the pathologist's attention. Atrophic or hypotrophic findings were considered as normal.

Analysis of data was done by SPSS Inc. version 20.0 (Chicago, Illinois, USA). The sensitivity, specificity, positive predictive value, negative predictive value, and overall accuracy of the diagnostic performance of hysteroscopy was calculated by using histopathology as the reference standard. The confidence level was 95% and p value ≤ 0.05 was considered statistically significant.

Results

Demographic variables are shown in (Table 1). A total of (67) women included in the present study with history of thick endometrium at age of menopause, about 35 cases were asymptomatic and 32 cases had history of vaginal bleeding The majority of the patients included in the study were multiparous (n=22 for the group A and 26cases for group B), and BMI (Kg/ m2 were (32.4 ± 3.2) about (33.8%) and (62%) were had medical disease.

Table 3.1 Population characteristic features

Characteristic	**Group A: Asymptomatic (n = 35)**	**Group B: Vaginal bleeding (n = 32)**
Age (years), mean ± SD	56.4 ± 5.2	61.4
Age range (years)	48–75	50–73
History of menstrual disturbance	14 (40.0%)	21 (65.6%)
Hormone replacement therapy	0 (0.0%)	0 (0.0%)
Age at menopause (years), mean ± SD	50.6 ± 3.1	50.4 ± 4.0
BMI (kg/m²), mean ± SD	32.4 ± 3.2	35.9 ± 4.0
Duration of menopause (years), mean ± SD	9.8 ± 4.5	11.5 ± 3.0
Parity		
Multiparous (1–5 births)	22 (62.9%)	26 (81.3%)
Nulliparous	13 (37.1%)	6 (18.7%)
Associated diseases		
Any associated disease	22 (62.9%)	29 (90.6%)
Diabetes mellitus	8 (22.9%)	9 (28.1%)
Hypertension	14 (40.0%)	18 (56.3%)
Thyroid disorder	0 (0.0%)	2 (6.3%)
Associated symptoms		
Pelvic pain	5 (14.3%)	11 (34.4%)
History of infertility	3 (8.6%)	8 (25.0%)
Dyspareunia	0 (0.0%)	2 (6.3%)
History of breast cancer	0 (0.0%)	2 (6.3%)

The distribution of the endometrial thickness measured by transvaginal ultrasonography is shown in Table 3.2. A higher rate of endometrial thickness of 5-12 mm was observed in Group A (85.7%) compared to Group B (53.1%). On the other hand, thickness >12 mm was significantly more prevalent in the women with vaginal bleeding (46.9%) than in asymptomatic women (14.3%). This difference was significant (P = 0.004).

Table 3.2. Endometrial thickness according to study group

Endometrial thickness	**Group A: Asymptomatic (n = 35)**	**Group B: Vaginal bleeding (n = 32)**	**p-value**
5–12 mm	30 (85.7%)	17 (53.1%)	
>12 mm	5 (14.3%)	15 (46.9%)	**0.004**
Total	**35 (100.0%)**	**32 (100.0%)**	

The hysteroscopic findings in asymptomatic women and women with postmenstrual bleeding is shown in Table 3.3. Group B was more likely to have polyps, submucosal fibroids, endometrial hyperplasia and lesions suspicious for malignancy. But none of the individual differences was significant.

Table 3.3. Comparison of hysteroscopic findings between the study groups

Hysteroscopic finding	Group A: Asymptomatic (n = 35)	Group B: Vaginal bleeding (n = 32)	p-value*
Normal endometrium	10 (28.6%)	6 (18.8%)	0.400
Atrophic endometrium	3 (8.6%)	2 (6.3%)	1.000
Endometrial polyp	9 (25.7%)	15 (46.9%)	0.081
Submucosal fibroid	3 (8.6%)	6 (18.8%)	0.292
Endometrial hyperplasia	9 (25.7%)	13 (40.6%)	0.298
Suspicious for malignancy	1 (2.9%)	4 (12.5%)	0.185

Table 3.4 shows the correlation between the hysteroscopic and pathological results in postmenopausal patients with no clinical symptoms. Generally, the distributions were similar for both diagnostic methods. Statistically no differences were found for any of the findings ($p > 0.05$).

Table 3.4. Comparison between hysteroscopic and histopathological findings among asymptomatic postmenopausal women (Group A)

Finding	Hysteroscopic finding, n (%)	Histopathological finding, n (%)	p-value
Normal endometrium	10 (28.6%)	9 (25.7%)	0.590
Atrophic endometrium	3 (8.6%)	3 (8.6%)	Not reported
Endometrial polyp	9 (25.7%)	8 (22.9%)	0.660
Submucosal fibroid	3 (8.6%)	2 (5.7%)	0.790
Endometrial hyperplasia	9 (25.7%)	10 (28.6%)	0.650
Suspicious for malignancy	1 (2.9%)	0 (0.0%)	0.729
Total	**35 (100.0%)**	**32 (91.4%)**	—

Table 3.5 lists the hysteroscope findings and the pathological findings in women with postmenopausal bleeding. Results of the two methods showed endometrial polyps and hyperplasia were the most common findings. With reported p-values, there were no statistically significant differences between hysteroscopy and histopathology (all $p > 0.05$).

Table 3.5. Comparison between hysteroscopic and histopathological findings among symptomatic postmenopausal women (Group B)

Finding	Hysteroscopic finding, n (%)	Histopathological finding, n (%)	p-value
Normal endometrium	5 (15.6%)	4 (12.5%)	0.590
Atrophic endometrium	1 (3.1%)	1 (3.1%)	Not reported
Endometrial polyp	15 (46.9%)	14 (43.8%)	0.660
Submucosal fibroid	6 (18.8%)	3 (9.4%)	0.790
Endometrial hyperplasia	14 (43.8%)	12 (37.5%)	0.650

Suspicious for malignancy	4 (12.5%)	3 (9.4%)	0.729

Table 3.6 presents the histopathological results of the asymptomatic women with the ones with postmenopausal bleeding. Endometrial polyps and endometrial hyperplasia were more commonly identified in Group B while none was found in Group A and 3 cases of endometrial carcinoma were identified in 3 women with symptoms.

Table 3.6. Comparison of histopathological findings between the study groups

Histopathological finding	Group A: Asymptomatic (n = 35)	Group B: Vaginal bleeding (n = 32)	p-value*
Normal endometrium	9 (25.7%)	4 (12.5%)	0.223
Atrophic endometrium	3 (8.6%)	1 (3.1%)	0.615
Endometrial polyp	8 (22.9%)	14 (43.8%)	0.117
Submucosal fibroid	2 (5.7%)	3 (9.4%)	0.664
Endometrial hyperplasia	10 (28.6%)	12 (37.5%)	0.603
Endometrial carcinoma	0 (0.0%)	3 (9.4%)	0.104

Table 3.7 shows the diagnostic ability of hysteroscopy with histopathological examination as a gold standard. The hysteroscopy had high sensitivity (96.9%), specificity (87.9%) and accuracy (92.3%) in the detection of normal endometrium. It also exhibited a high specificity for submucosal fibroids (100.0%), polyps (92.5%) and endometrial hyperplasia (90.0%). The least accurate diagnosis was for endometrial carcinoma (81.0%).

Table 3.7. Diagnostic performance of hysteroscopy according to endometrial finding

Hysteroscopic finding	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	Accuracy (%)
Normal endometrium	96.9	87.9	96.7	88.6	92.3
Submucosal fibroid	75.0	100.0	100.0	96.1	90.8
Endometrial carcinoma	73.0	83.0	85.0	87.0	81.0
Endometrial hyperplasia	87.0	90.0	92.0	88.0	90.0
Endometrial polyp	83.3	92.5	71.4	96.1	96.6

Discussion

Thickening of the endometrium after menopause is an important clinical finding and can indicate benign, premalignant or malignant pathology [13]. A thorough evaluation of women is important, not only to diagnose endometrial carcinoma early, but also to avoid unnecessary invasive procedures. The present study therefore evaluated the usefulness of hysteroscopy in differentiating the endometrial lesions and the histopathological examination as a reference.

In general, women who complained of PMB had a poorer clinical profile than those who did not complain. 90.6% of the women with symptoms reported associated diseases while 62.9% of the women without symptoms did so. Mean BMI and hypertension prevalence was also higher in the symptomatic participants. This may relate to the role metabolic disorders play in endometrial proliferation; obesity, diabetes and hypertension are known risk factors for endometrial hyperplasia and carcinoma [14].

Thickened endometrium (defined as > 12 mm) was significantly more common in the symptomatic women than in the asymptomatic women (46.9% vs 14.3%, p = 0.004), as seen in the transvaginal ultrasonography. This finding is similar to previous studies which have shown that when the endometrium

of women with PMB gets thicker, they are more likely to have clinically significant endometrial disease [15]. However, endometrial thickness is not a reliable indicator to differentiate benign from malignant lesions. Quaranta et al. recommended that 11 mm should be considered as a cut-off for further investigation in asymptomatic postmenopausal women with 3.7% and 4.4% prevalence of malignancy and atypical hyperplasia, respectively [16].

Hysteroscopy identified endometrial polyps in 25.7% of women without symptoms, and 46.9% of women with symptoms. Endometrial Hyperplasia was found in 25.7% and 43.8% respectively. These results show that polyps and hyperplastic changes were the most common abnormalities, especially in the women who presented with bleeding. Other structural benign lesions, such as polyps, have been noted in many postmenopausal women with hysterectomy and have been reported in a significant percentage of the hysteroscopic findings in these studies [17,18].

Hysteroscopy revealed suspicious lesions that might be malignant in 2.9% of asymptomatic women and 12.5% of symptomatic women. In turn, the histopathological examination confirmed the diagnosis of endometrial carcinoma in 3 women with symptoms (9.4%) and not in the asymptomatic group. This discovery confirms the known association between postmenopausal bleeding and uterine cancer. In previous studies, about 5–10% of women who are evaluated for postmenopausal bleeding have been found to have malignancy [19,20].

The diagnosis of endometrial polyps was confirmed in 22.9% and 43.8% of the asymptomatic and symptomatic women, respectively, and endometrial hyperplasia was confirmed in 28.6% and 37.5% of the asymptomatic and symptomatic women, respectively. The overall distributions of the two methods, hysteroscopy and histopathology, are comparable, indicating that hysteroscopy may be clinically helpful for the detection of focal intracavitary abnormalities. This is in line with the previous studies that have shown good hysteroscopic detection for both endometrial polyps and submucosal fibroids [21,22]. But a comparison of marginal frequencies does not provide a measure of level-of-patient diagnostic agreement; paired cross-tabulation and kappa statistics would be needed for accurate measurement of concordance.

High sensitivity (96.9%), specificity (87.9%) and accuracy (92.3%) were reported for hysteroscopy for normal endometrium. The reported accuracy level was 90.0% for endometrial hyperplasia, and 73.0% sensitivity and 83.0% specificity for endometrial carcinoma. This is in line with the results of the previous studies which has demonstrated good diagnostic accuracy of hysteroscopy in intrauterine abnormalities [23,24,25]. The somewhat less sensitivity with respect to carcinoma may be attributed to the relatively small number of malignant cases, which leads to unstable estimates of sensitivity [26,27].

Although useful for diagnosis, it should be noted that hysteroscopic appearance cannot rule out the diagnosis of a premalignant or malignant disease. Apparently benign lesions can have focal atypia or malignancy, and hyperplastic and early carcinoma can have similar visual features. Histopathological confirmation is thus still needed, especially if the woman is symptomatic and the hysteroscopic appearance is suspicious.

This study validates the use of transvaginal ultrasound, hysteroscopy and targeted biopsy to assess postmenopausal endometrial thickening. Although ultrasonography is a helpful preliminary evaluation, hysteroscopy allows direct visualization and sampling of abnormal areas [28]. Also, asymptomatic women with significant endometrial thickening should be evaluated on a case-by-case basis, especially if there is a risk factor like obesity or diabetes. However, for those women who are asymptomatic and have reassuring hysteroscopic and histological results, conservative follow-up can be warranted [29].

Conclusion

SMB was also linked to a higher prevalence of pathological endometrial changes, such as endometrial hyperplasia and endometrial carcinoma, than SMT. Endometrial polyps and hyperplasia were the most common in both groups. Hysteroscopy proved to be a good diagnostic tool and can be used as a useful tool for targeted endometrial biopsy. However, pathological confirmation is still necessary particularly for atypical or suspicious lesions. Women with incidentally detected endometrial thickening who are asymptomatic should be treated on a case-by-case basis based on endometrial thickness and associated risk factors (e.g., obesity and diabetes) to balance the need for prompt detection of significant pathology with the avoidance of unnecessary invasive procedures.

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