The Role of Hysteroscopy in Evaluating Postmenopausal Asymptomatic Women with Thickened Endometrium

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ABSTRACT

Postmenopause is defined as the permanent cessation of menstruation for at least 12 months after the age of 45 years and is associated with declining oestrogen levels, leading to vasomotor symptoms and increased risks of osteoporosis, cardiovascular disease, and cognitive changes. Normally, the postmenopausal endometrium becomes thin, measuring less than 5 mm; however, endometrial thickening may indicate benign or malignant pathology, including hyperplasia, polyps, or endometrial carcinoma. While simple hyperplasia is generally benign, complex atypical hyperplasia is considered a precancerous condition. Thickened endometrium, even in the absence of bleeding, warrants careful evaluation, particularly in women with additional risk factors. This pro-retrospective observational study was conducted at Basra Maternity and Children Hospital and Almosawi Hospital in Basrah City, Iraq, between 1 January 2022 and 1 January 2025. It included 65 asymptomatic postmenopausal women with an endometrial thickness greater than 5 mm. Data regarding demographic characteristics, body mass index, medical history, and gynaecological symptoms were collected. Endometrial thickness was assessed using transvaginal ultrasonography, followed by outpatient diagnostic hysteroscopy. Operative hysteroscopy was subsequently performed when indicated, and histopathological examination was considered the diagnostic gold standard. Correlation between hysteroscopic and histopathological findings was analyzed. Most women were multiparous (84%) with a mean body mass index of 32.4 ± 3.2 kg/m². Endometrial thickness ranged from 5 to 12 mm in 73.8% of cases and exceeded 12 mm in 26.2%. Hysteroscopy revealed normal endometrium in 50.8%, hyperplasia in 12.3%, and suspected malignancy in 6.1%, showing close agreement with histopathological results. Diagnostic accuracy was high, with sensitivity and specificity values of 96.9% and 87.9% for normal endometrium, 87% and 90% for hyperplasia, 73% and 83% for carcinoma, 83.3% and 92.5% for polyps, and 75% and 100% for myomas. Hysteroscopy proved to be a reliable and accurate diagnostic modality for evaluating thickened endometrium in asymptomatic postmenopausal women, demonstrating strong correlation with histopathology and superior diagnostic value compared with transvaginal ultrasound, particularly for early detection of premalignant and malignant lesions in obese women with associated comorbidities.

Keywords: Postmenopause, Thickened endometrium, Hysteroscopy, Endometrial hyperplasia, Endometrial carcinoma

INTRODUCTION

While initial assessment by ultrasound can indicate endometrial thickening, hysteroscopy plays a crucial role in establishing a more definitive diagnosis through direct visualization of the uterine cavity. Hysteroscopy allows healthcare providers to obtain a clearer and more accurate understanding of intrauterine pathology, leading to improved treatment decisions and better patient outcomes. It is particularly useful in identifying endometrial pathologies (1,2).

One of the main advantages of hysteroscopy is its ability to provide real-time, direct visualization of the uterine cavity. This enables clinicians to assess the endometrial lining in detail and identify abnormal growths such as polyps, submucous fibroids, or tumours. Although ultrasound can suggest endometrial thickening, it cannot reliably determine the underlying cause or provide detailed information about the endometrial surface or tissue characteristics. In contrast, hysteroscopy can distinguish between benign conditions, such as polyps, and more serious pathologies, including endometrial hyperplasia or malignancy (1–4).

Hysteroscopy is particularly valuable in detecting cancerous and precancerous lesions, including atypical endometrial hyperplasia and endometrial carcinoma, in postmenopausal women (3). It plays a critical role in the early detection of malignancy, especially in cases where endometrial biopsy or other diagnostic methods are inconclusive. By allowing targeted visualization of

suspicious areas within the uterine cavity, hysteroscopy facilitates earlier diagnosis and contributes to improved prognosis (3). It is also effective in identifying submucous fibroids (leiomyomas) (4).

Early detection of endometrial pathology, particularly in postmenopausal women with asymptomatic thickened endometrium, is essential for optimizing treatment outcomes, improving prognosis, and reducing the risks associated with endometrial cancer. Timely diagnosis enables earlier and less invasive interventions, higher survival rates, and better quality of life. Therefore, this study aims to investigate the role of hysteroscopy in the detection of uterine abnormalities in postmenopausal women with asymptomatic thickened endometrium (5).

The aim of this study is to evaluate the diagnostic role and accuracy of hysteroscopy in detecting uterine abnormalities in postmenopausal women with asymptomatic thickened endometrium. It also aims to assess the correlation between hysteroscopic findings and histopathological results to determine the effectiveness of hysteroscopy in early identification of premalignant and malignant endometrial lesions.

METHODS

This pro-retrospective observational study was conducted at Basrah Maternity and Children Hospital and Almosawi Hospital in Basrah City, Iraq. Case records of women were reviewed for the period from 1 January 2022 to 1 January 2025 to compare hysteroscopic and histopathological findings in asymptomatic postmenopausal women with thickened endometrium.

The study population comprised 65 postmenopausal women who underwent outpatient diagnostic and therapeutic hysteroscopy along with endometrial biopsy for evaluation of thickened endometrium. Postmenopause was defined as the absence of menstruation for at least 12 consecutive months after the age of 45 years (6).

Inclusion criteria included asymptomatic women with no abnormal uterine bleeding and an endometrial thickness greater than 5 mm detected on transvaginal ultrasonography (TVS). Exclusion criteria were a personal history of genital tract malignancy, current or previous use of hormone replacement therapy, history of endometrial surgery or intrauterine instrumentation within the preceding six months, and incomplete clinical or histopathological records.

Data were collected from case records using a structured questionnaire developed for the study. Variables collected included age, parity, age at menopause, duration of menopause, and body mass index (BMI). Past medical history, including diabetes mellitus, hypertension, thyroid disorders, and breast cancer, was also recorded. Additional associated gynaecological symptoms, if present, such as pelvic pain, previous infertility, dyspareunia, and vaginal discharge, were documented.

All women underwent transvaginal ultrasonography using a 7.5 MHz probe to measure endometrial thickness in the sagittal plane. An endometrial thickness greater than 5 mm was considered abnormal and categorized as 5–12 mm or greater than 12 mm. All TVS examinations were performed by the same sonographer to ensure consistency.

Outpatient hysteroscopy was performed using a rigid hysteroscope with normal saline as the distension medium. Hysteroscopic findings were classified as normal endometrium, atrophic endometrium, endometrial polyp, submucous myoma, endometrial hyperplasia, or suspicious for malignancy. Women with positive hysteroscopic findings underwent therapeutic hysteroscopy, and all obtained specimens were processed and examined by a senior pathologist who was blinded to the hysteroscopic findings. Histopathological examination was considered the diagnostic gold standard.

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) version 26 (IBM Corp., Armonk, NY, USA). Quantitative variables were expressed as mean ± standard deviation, while qualitative variables were presented as frequencies and percentages. The chi-square test was used to assess associations between categorical variables, and Fisher's exact test was applied when expected cell counts were less than five. The independent samples t-test was used for comparison of continuous variables. Diagnostic performance of hysteroscopy was evaluated by calculating sensitivity, specificity, positive predictive value, negative predictive value, and overall diagnostic accuracy, using histopathology as the reference standard. Correlation between hysteroscopic and histopathological findings was assessed, and a p-value of ≤ 0.05 was considered statistically significant.

RESULTS

Demographic variables are presented in Table (1). A total of 65 women with asymptomatic thickened endometrium were included in the present study. The majority of the patients were multiparous (84%, n = 54). The mean body mass index (BMI) was 32.4 ± 3.2 kg/m². Approximately

33.8% of the participants had a medical disease. The most commonly reported associated symptom was pelvic pain, which was present in 17% of cases (n = 11).

Table 1: Population characteristic features

Variables	N (65)	Range
Mean age (years)	61.4 ± 5.2	49 -79
History of menstrual disturbance	34 (55%)	-
Age of menopause	53.6 ± 3.1	48 - 52
BMI (Kg/ m^2	32.4 ± 3.2	22.4 - 35.9
Duration of menopause	11.8 ± 4.5	5 - 20
Parity (Mean) Multipara (1- 5) Nullipara	3.2 ± 1.2 54 (84%) 11(16 %)	-
Associated disease Diabetes Hypertension Thyroid disorder	22(33.8%) 8 (12.3%) 12 (18.5%) 2 (3.07%)	-
Associated symptoms Pelvic pain Infertility Dyspareunia	 11 (17.0%) 8 (12.3 %) 2 (3.07 %)	-
Breast cancer	2 (3.07%)	-

Endometrial thickness by Transvaginal ultrasonography revealed that (17) women with endometrium thickness more than 12 mm (Table 2).

Table 2: Endometrial thickness by TVS

Endometrial thickness	N %
5 - 12 mm	48 (73.8)
>12 mm	17 (26.2)

Hysteroscopic evaluation identified normal endometrium in 50.8% of cases, whereas histopathological examination confirmed normal endometrium in 46% of patients. Of the cases diagnosed with endometrial hyperplasia by histopathology (n = 10), hysteroscopy correctly identified hyperplasia in 8 cases. Endometrial carcinoma was detected in four patients arising on a hyperplastic background. Of these, two cases were endometrioid carcinoma, while the remaining two were adenocarcinoma, characterized hysteroscopically by hypervascular and haemorrhagic suspicious areas (Table 3).

Endometrial atrophy demonstrated good correlation between hysteroscopic and histopathological findings, with three cases identified by both methods (12). Lesions identified as endometrial polyps were resected hysteroscopically. However, one polyp was not detected during hysteroscopy, and in another case, a polyp was associated with focal simple hyperplasia on histological examination despite the absence of a typical hysteroscopic appearance. All five cases diagnosed as submucous myomas on histopathology were identified during hysteroscopy; however, in one case, the lesion initially thought to be a myoma was histologically confirmed to be a fibrous polyp.

Table 3: Comprising between hysteroscopic and histological findings in asymptomatic postmenopausal women with a thickened endometrium

Finding	Hysteroscopic finding (N=65)	Histopathological findings (N=65)	Correlation (r)
Normal	33 (50.8)	30 (46.2)	0.59
Atrophic	3(4.6)	3(4.6)	1.00
Polyp	12 (18.5)	13 (21	0.66
Submucosal fibroid	6(12.3)	5(9.1)	0.79
Endometrial hyperplastic	8 (12.3)	10 (15.5)	0.65
Suspicious of malignancy	4 (6.15)	3(4.6)	0.72

The diagnostic accuracy of hysteroscopy for identifying normal endometrium showed a sensitivity of 96.9%, specificity of 87.9%, positive predictive value (PPV) of 96.7%, and negative predictive value (NPV) of 88.6%. For the diagnosis of endometrial hyperplasia, hysteroscopy demonstrated a sensitivity of 87%, specificity of 90%, PPV of 92%, and NPV of 88%. The sensitivity, specificity, PPV, NPV, and overall diagnostic accuracy for other endometrial findings detected by hysteroscopic evaluation were also calculated and are presented in Table (4). A p-value of ≤0.05 was considered statistically significant.

Table 4: Sensitivity, specificity, positive predictive value, and negative predictive value (%) for hysteroscopy cases

Hysteroscopic finding	Sensitivity	specificity	PPV	NPV	Accuracy
Normal	96.9	87.9	96.7	88.6	92.3
Myoma	75.0	100	100	96.1	90.8
Carcinoma	73	83	85	87	81
hyperplasia	87	90	92	88	90
Polyp	83.3	92.5	71.4	96.1	96.6

DISCUSSION

Endometrial thickening in postmenopausal women, particularly in those who are asymptomatic, presents a significant clinical dilemma. While transvaginal sonography (TVS) is a valuable first-line tool for assessing endometrial thickness, it lacks the ability to reliably differentiate between benign and malignant conditions (6,7). Accurate identification of the underlying pathology is essential, especially given the risk of missing endometrial hyperplasia or malignancy. Therefore, hysteroscopy combined with histopathological biopsy remains the gold standard for the evaluation of such cases (8).

Obesity observed in the present study is a well-established risk factor for endometrial hyperplasia and carcinoma due to unopposed oestrogen resulting from peripheral conversion in adipose tissue (9,10). Furthermore, 33.8% of the studied women had associated medical conditions, primarily diabetes mellitus and hypertension, both of which are known to increase the risk of endometrial pathology (11,12).

An endometrial thickness threshold of ≥5 mm is commonly used as a marker of concern in postmenopausal women; however, higher thresholds, such as >11 mm, are considered more predictive of pathology in asymptomatic patients (12–14).

In the present study, hysteroscopy identified normal endometrium in 50.8% of cases, corresponding with histopathological findings, which confirmed normal endometrium in 46.2%. Similarly, the rate of endometrial hyperplasia detected by hysteroscopy (12.3%) was comparable to the histopathological diagnosis rate (15.5%). Hysteroscopy also demonstrated good diagnostic agreement for other lesions, including polyps (18.5% hysteroscopically versus 21% histologically) and submucosal fibroids (12.3% versus 9.1%). These findings indicate moderate to high correlation and support the reliability of hysteroscopy as a diagnostic tool, consistent with previous studies (15,16). Notably, hysteroscopy identified four cases suspicious of malignancy, of which three were confirmed histopathologically, while the fourth showed premalignant changes. Among the confirmed malignant cases, one was endometrioid carcinoma and another was adenocarcinoma, both associated with hypervascular and haemorrhagic areas on hysteroscopy, highlighting the value of direct visualization in detecting malignant features (17).

In one case, a lesion identified hysteroscopically as a polyp was histologically diagnosed as simple hyperplasia, illustrating that focal hyperplastic changes may mimic benign findings on visual inspection (12). Conversely, one fibrous polyp was initially interpreted as a submucosal myoma during hysteroscopy, underscoring a limitation of hysteroscopy in differentiating fibrous lesions based solely on appearance (18). Although uncommon, endometrial polyps may represent a potential origin of malignancy (19,20).

With respect to diagnostic performance, hysteroscopy achieved a sensitivity of 87% and specificity of 90% for detecting endometrial hyperplasia, with a high positive predictive value of 92%, indicating strong reliability in identifying premalignant lesions. Detection of carcinoma demonstrated a sensitivity of 73% and specificity of 83%, which is acceptable given the limited number of malignant cases. Polyps and fibroids also showed high diagnostic accuracy, particularly fibroids, for which specificity and positive predictive value reached 100%, reflecting their distinct visual characteristics. These findings are comparable to published literature. Chou et al. (2024) reported a hysteroscopic sensitivity of 86% and specificity of 91% for detecting endometrial hyperplasia or malignancy in postmenopausal women (21). Other studies have similarly demonstrated that hysteroscopy outperforms blind endometrial biopsy or dilation and curettage in identifying focal and structural lesions (22).

Gkrozou et al. (2015) reported that office hysteroscopy for diagnosing endometrial polyps and masses achieved sensitivities and specificities exceeding 95%. Additionally, hysteroscopic changes in thickened endometrium as predictors of malignant or premalignant disease demonstrated 100% sensitivity and 76.09% specificity (23).

More recently, outpatient hysteroscopy with targeted biopsy has been increasingly regarded as the gold standard investigation for ultrasound-detected endometrial thickening. This approach allows complete visualization of the uterine cavity and directed biopsy of localized lesions and has been shown to be more reliable than dilation and curettage when compared with hysterectomy findings (24).

A significant proportion of women in this study (over 25%) had underlying pathology, including hyperplasia and carcinoma, despite being asymptomatic (1). TVS alone cannot adequately characterize the nature of endometrial thickening, and reliance solely on thickness thresholds may lead to underdiagnosis of significant pathology (25, 26). Hysteroscopy, as a minimally invasive, office-based procedure, provides real-time visual assessment and targeted biopsy, thereby improving diagnostic accuracy and guiding appropriate clinical management.

CONCLUSION AND RECOMMENDATIONS

Hysteroscopy is a highly accurate and reliable diagnostic tool for evaluating asymptomatic postmenopausal women with thickened endometrium, showing strong correlation with histopathological findings across a range of endometrial conditions. A substantial proportion of women had significant underlying pathology, including endometrial hyperplasia and carcinoma, despite the absence of abnormal uterine bleeding, highlighting the limitations of transvaginal ultrasonography alone in characterizing endometrial abnormalities. The high sensitivity and specificity of hysteroscopy, particularly for normal endometrium, hyperplasia, polyps, and submucosal fibroids, underscore its value in early detection of premalignant and malignant lesions.

Based on these findings, hysteroscopy with targeted biopsy should be recommended as a routine diagnostic approach in

asymptomatic postmenopausal women with thickened endometrium, especially in those with risk factors such as obesity and associated medical comorbidities, to ensure accurate diagnosis, timely intervention, and improved clinical outcomes.

Conflicts of Interests: None

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