

Transvaginal Sonography Versus Hysteroscope in Diagnosis of Endometrial Polyp in Women with Post-Menopausal Bleeding

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Abstract—Background: Postmenopausal bleeding is a significant gynecological concern that requires careful evaluation. Endometrial polyps are among the most common benign causes of postmenopausal bleeding. Transvaginal ultrasonography is widely used as an initial diagnostic tool, while hysteroscopy is considered the gold standard for direct visualization and tissue diagnosis. **Aim of the Study:** To compare the diagnostic efficacy of trans vaginal ultrasonography in comparison to hysteroscopy in diagnosis of endometrial polyps in women with postmenopausal bleeding. **Patients and Methods:** Prospective comparative cross-sectional study was conducted at Babil Teaching Hospital for Maternity and Children, from January 2025 to August 2025. The study included 60 postmenopausal women presenting with vaginal bleeding. All patients underwent transvaginal ultrasonography followed by diagnostic hysteroscopy, and tissue samples were examined histopathologically. Diagnostic performance was calculated and compared for both diagnostic methods. **Results:** The mean age of the patients was 60.7 ± 8.4 years, and the mean duration since menopause was 8.8 ± 5.8 years. Hysteroscopy detected endometrial polyps in 68.3% of patients, while histopathological examination confirmed endometrial polyps in 66.7%. Transvaginal ultrasonography detected endometrial polyps in only 15% of cases. Transvaginal ultrasonography showed a sensitivity of 20%, specificity of 95%, positive predictive value of 88.9%, negative predictive value of 37.25%, and overall diagnostic accuracy of 45%. Hysteroscopy showed a sensitivity of 100%, specificity of 95%, positive predictive value of 97.56%, negative predictive value of 100%, and overall diagnostic accuracy of 98.33%. Endometrial carcinoma was diagnosed in 6.7% of patients. **Conclusions:** Endometrial polyps were the most common histopathological finding among women with postmenopausal bleeding. Transvaginal ultrasonography demonstrated high specificity but very low sensitivity for the detection of endometrial polyps.

Keywords— Postmenopausal bleeding, Endometrial polyps, Transvaginal ultrasonography, Hysteroscopy.

I. INTRODUCTION

Endometrial polyps are frequently encountered in clinical practice and can significantly impact menstrual health, fertility, and overall well-being. For gynecologists, maintaining a high index of suspicion is crucial, especially in postmenopausal women or those presenting with unexplained abnormal uterine bleeding [Berceanu C, *et al.*, 2022].

A systematic approach incorporating transvaginal ultrasound, saline infusion sonography, and definitive hysteroscopic evaluation ensures accurate diagnosis. Prompt hysteroscopic removal not only alleviates bleeding and potential infertility but also provides vital tissue for pathological analysis to exclude premalignant or malignant processes [Vital SG, *et al.*, 2021].

Through vigilant surveillance and appropriate management, most women experience meaningful improvement in symptoms and reproductive outcomes. [Bocca SM, *et al.*, 2019].

Transvaginal sonography is indispensable for the initial evaluation of postmenopausal bleeding due to its simplicity, accessibility, and cost-effectiveness. However, hysteroscopy remains the reference standard for diagnosing endometrial polyps and other uterine cavity abnormalities, offering direct visualization and an opportunity for simultaneous intervention [Fadi SA, *et al.*, 2018].

In women with inconclusive or suspicious ultrasound findings, and especially those with persistent postmenopausal bleeding, hysteroscopy is both diagnostic and therapeutic, ensuring accurate identification of endometrial polyps and reducing the likelihood of missing malignancy [Raz N, *et al.*, 2021].

By leveraging the strengths of each modality and understanding their respective limitations, clinicians can provide timely and precise care to women at risk of endometrial pathology [Shor S, *et al.*, 2019]. This study aims to compare the diagnostic efficacy of trans vaginal ultrasonography in comparison to hysteroscopy in diagnosis of endometrial polyps in women with postmenopausal bleeding.

1.1 Diagnostic Evaluation

• Transvaginal Ultrasound (TVUS)

TVUS is often the initial imaging modality in evaluating abnormal uterine bleeding. Polyps may appear as focal endometrial thickening or echogenic masses within the endometrial cavity. While TVUS is widely accessible and cost-effective, small or multiple polyps can sometimes be missed [Poliakove Y, *et al.*, 2020].

On trans vaginal ultrasonography (TVU), an endometrial polyp typically appears as a hyper echoic lesion with regular contours within the uterine lumen, outlining the endometrial walls on which it rests, surrounded by a thin hyper echoic halo. Cystic spaces corresponding to dilated glands filled with

fluid may be seen within the polyp or the polyp may appear as a nonspecific endometrial thickening or focal mass within the endometrial cavity. Such sonographic findings are not specific to polyps, and other endometrial abnormalities such as sub mucosal fibroids may have the same features. To aid in the diagnosis of an endometrial polyp, TVU is best performed in premenopausal women in the proliferative phase of the cycle when the endometrium is at its thinnest to minimize the risk of false-positive and -negative findings.

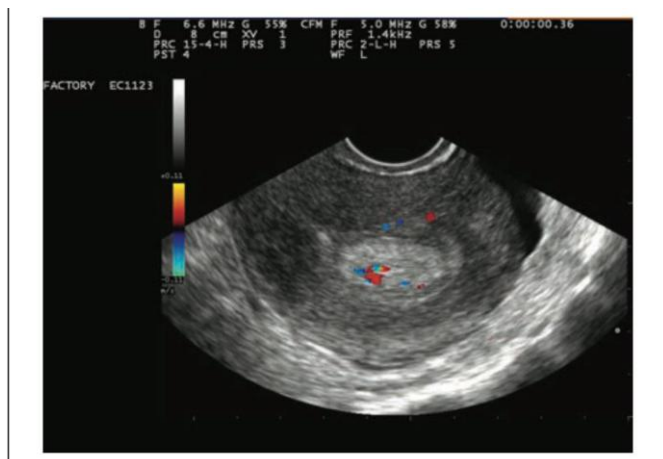


Figure 1.1: Transvaginal ultrasonography (TVUS) image showing an endometrial polyp [Rasekh jahromi A, *et al.*, 2024].

• Saline Infusion Sonography (SIS)

Saline Infusion Sonography also known as sonohysterography, provides greater sensitivity by delineating the endometrial cavity with saline. This method is particularly helpful in detecting small polyps, distinguishing them from submucous fibroids, and clarifying the polyp's stalk or broad base Dimitriu G, *et al.*, 2018].

• Hysteroscopy

Diagnostic hysteroscopy remains the gold standard for direct visualization. It allows for an exact assessment of the lesion's location, size, and morphology. It offers the opportunity for immediate biopsy or complete polyp resection. Hysteroscopic findings are often pivotal, especially if there are suspicions of malignancy or if the patient is undergoing evaluation for infertility [Ngo YG, *et al.*, 2020].

Although hysteroscopy is very sensitive and specific, it generally requires special settings as in office or an operating room and local or general anesthesia. These requirements increase the risk and the cost. Even though magnification with hysteroscopy allows excellent visualization of the small details in the uterine cavity, the correct interpretation of these details is difficult and requires a great deal of experience. Hysteroscope can be beneficial to a lot of patients. Millions of women per year present to the gynecologists for the evaluation of abnormal uterine bleeding which is a multifactorial disorder that can be a result of structural abnormalities such as endometrial polyps or leiomyomas and non-structural etiologies such as ovulatory dysfunction or coagulopathy as described in the PALM-COIN classification of abnormal uterine bleeding. (Chodankar R, *et al.*, 2019].

The PALM (Polyp, Adenomyosis, Leiomyoma [fibroids], and malignancy) and the COIN (Coagulopathy, Ovulatory and Endometrial dysfunction, Iatrogenic and Not otherwise classified) [Reddy SA, *et al.*, 2019].

Hysteroscope is a valuable tool for investigating the etiology of AUB in both pre and post- menopausal women and identifying pathology that can then be treated [Fagioli R, *et al.*, 2020].

Regarding preparation for hysteroscopy optimal timing for hysteroscopic procedures is during the early proliferative phase, when the endometrial lining is the thinnest. In premenopausal patients with cervical stenosis, cervical softening with 400-800 µg of synthetic E1 prostaglandin (i.e. misoprostol) administered vaginally 12 hours before the procedure effectively decreases subjective outcomes of pain. It is not routinely recommended because it is associated with increased side effects (e.g. abdominal pain, nausea, diarrhea, fever and vaginal bleeding), has no significant difference in rates of cervical laceration or false tract formation. In postmenopausal women with cervical stenosis, pretreatment with 2 weeks of 25 µg of vaginal estradiol in combination with 400 µg of vaginal misoprostol 12 hours before the procedure can help facilitate passage of the hysteroscope through the cervical canal [Giampaolino P, *et al.*, 2020].000000

• Magnetic resonance imaging:

Magnetic resonance imaging (MRI) is not the first-line imaging for uterine (endometrial) polyps but serves as a valuable problem-solving tool when ultrasound or saline infusion sonohysterography is inconclusive or when malignancy is suspected. On MRI, polyps typically appear as intermediate-to-high signal intensity masses on T2-weighted images, often with a central low-signal fibrous core, and show homogeneous enhancement after contrast administration. They generally lack diffusion restriction, which helps distinguish them from endometrial carcinoma. MRI offers superior soft tissue contrast and is especially useful for evaluating complex cases, differentiating from submucosal fibroids or malignancy, and aiding in preoperative planning [Kawaguchi M, *et al.*, 2019].

• Pathological Assessment:

Any resected polyp should undergo histopathological examination. Although the majority are benign, a subset—particularly in older patients—may show atypical changes or harbor malignancy (e.g., endometrial carcinoma arising within the polyp). Histological evaluation determines the definitive nature of the lesion and guides further management [Tekin S, *et al.*, 2024].

II. PATIENT AND METHOD

2.1. Study Design

Cross-sectional diagnostic validity study designed to evaluate the diagnostic accuracy of transvaginal ultrasound versus hysteroscopy in detecting endometrial polyps in postmenopausal women presenting with vaginal bleeding.

2.2. Study Setting

The study was conducted at Babil Teaching Hospital for Maternity and Children, Iraq, over a period of eight months, from January 2025 to August 2025.

2.3 Ethical approval:

the study's project agreement was obtained from the Iraqi Board of Medical Specializations / Scientific Council of Gynecology and Obstetrics and from Babylon health department/ training and development center prior to data collection. Verbal consent was obtained from all the patients during data collection and blood sampling. Data and information of the participants were kept confidential. (the number of the approval is 675A on 5-12-2024).

2.4 Patient selection:

The sample size was calculated using Cochran's formula ($n_0 = z^2 \times p \times (1 - p) / e^2$) based on the expected prevalence of endometrial polyps in postmenopausal women with abnormal bleeding. The final estimated sample included 60 women, selected from those attending the gynecology ward and from private clinics during the study period. Eligible participants were diagnosed clinically by senior gynaecologist with postmenopausal bleeding and underwent both transvaginal ultrasound and hysteroscopy.

2.5. Inclusion Criteria:

1. Postmenopausal women (defined as absence of menstruation for ≥ 12 months)
2. Agreed to undergo both transvaginal ultrasound and diagnostic hysteroscopy
3. Ultrasound finding of increased endometrial thickness > 4 mm.
4. Women with postmenopausal vaginal bleeding.

2.6. Exclusion Criteria:

1. Patients with known bleeding disorders or on current anticoagulant therapy.
2. Patients on tamoxifen treatment.
3. Evidence of pelvic inflammatory disease
4. History of cervical or endometrial malignancy.
5. Loss of data or refusal to participate or contraindication to hysteroscopy.

2.7 Data Collection:

Data were collected prospectively from each participant using a questionnaire (Appendix) that was prepared by the researcher and collected through direct interviews and medical record reviews. The following variables were recorded:

1. Demographic and Clinical Data

- Age (in years)
- Body mass index (BMI), calculated as weight (kg) / height² (m²)
- Parity
- Age at menopause
- Duration since menopause
- History of chronic diseases (hypertension, diabetes mellitus)
- History of hormone replacement therapy or tamoxifen use

- Smoking status
- Family history of gynecological malignancy

2. Physical Examination

All patients underwent a general and gynecological examination including:

- Vital signs (blood pressure, pulse rate, temperature, respiratory rate)
- Abdominal examination (to rule out palpable masses or tenderness)
- Bimanual pelvic examination (uterine size, mobility, adnexal masses or tenderness)
- Speculum examination (to assess for cervical or vaginal pathology as the source of bleeding) .

3. Transvaginal Ultrasound Technique

All participants underwent transvaginal ultrasonography performed by radiologist at the hospital. After the bladder was emptied, the patient was placed in the dorsal lithotomy position.

Transvaginal ultrasound findings (e.g., focal echogenic mass within the endometrial cavity, with or without cystic areas) were recorded and later compared with the hysteroscopic and histological results to assess diagnostic accuracy.

A transvaginal probe (5–9 MHz), SAMSUNG USS-HS6NL40/WR (Korea, 2021), was used under aseptic conditions. The following sonographic variables were recorded:

- Endometrial thickness
- Endometrial appearance (homogeneous or heterogeneous)
- Presence of focal endometrial lesions suggestive of polyps (echogenic mass, cystic spaces)
- Uterine size and shape
- Presence of fibroids or adnexal masses
- Presence of intrauterine fluid
- Distant feeding vessel

4. Hysteroscopy Technique

Patients were admitted to the gynecology ward and were prepared for anaesthesia by sending the required investigations (ECG, Chest X-ray, CBC and Virology screen). Diagnostic hysteroscopy was performed by senior gynaecologist under general or regional anaesthesia in the operating theatre.

The patient was positioned in the lithotomy position with the hips well flexed and the buttocks slightly beyond the edge of the examination table to ensure unimpeded access regardless of uterine orientation. A 'no-touch' vaginoscopic approach was employed.

The hysteroscope was introduced into the vaginal canal and advanced into the uterine cavity under direct vision. Routine blind cervical dilatation was strictly avoided to minimize the risk of cervical or uterine trauma. While traversing the endocervical canal, care was taken

to maintain proper alignment of the hysteroscope with the uterine axis. The light absorption along the canal, visualized as a dark ellipse, was used as a guide to orientation. With a 0° hysteroscope, the canal appeared centrally; with an oblique-view hysteroscope, it appeared eccentrically depending on the scope's orientation.

A diagnostic hysteroscope (KARL STORZ, Bettocchi, 2016) was introduced into the uterine cavity using normal saline (0.9%) as a distention medium. Intrauterine pressure was maintained at 80 mmHg. The entire endometrial cavity, including the fundus, cornua, tubal ostia, and uterine walls, were examined for any pathology and other abnormalities.

Upon entry into the uterine cavity, a systematic inspection of the endometrial cavity was performed, including the fundus, both tubal ostia, and all uterine walls. This was achieved through rotational movements of the hysteroscope (especially important when using an oblique-view lens) and controlled manipulation in vertical and horizontal planes. Panoramic views were used for global assessment of cavity contour and abnormalities, while close-up inspections allowed detailed evaluation of the endometrial surface and any focal lesions.

•If a lesion was present, dilation was extended up to 9 mm (to use resectoscope 26Fr) and the lesion was removed using loop electrodiathermy or mechanical instruments such as scissors.

•If no visible pathology was found, endometrial curettage was performed to obtain biopsy for histopathological examination.

After completing the intrauterine examination, the hysteroscope was slowly withdrawn, allowing for final inspection of the endocervical canal. All removed tissue was sent for histopathology.

No intraoperative or immediate postoperative complications were observed, and all patients were discharged on the same day with oral antibiotics and analgesia. Patients were provided with records about the procedure

After completing the data collection in the paper questionnaires all the patients' data was transformed into a Microsoft excel work sheet and sent for further statistical analysis.

2.6. Statistical Analysis

Data analysis was done using Statistical Package for Social Sciences (SPSS) version 27 for Microsoft® Windows 11, results were presented in simple measures of frequency, percentage, mean, range and standard deviation and illustrated as tablets and figures.

Chi-square test or Fisher's exact test were used to evaluate associations between categorical variables and t test was used to evaluate associations between continues variables to determine any significant differences. A p-value < 0.05 was considered statistically significant.

TABLE 2.1: validity testing table

	Final Histopathology Positive	Final Histopathology Negative	Total
TVUS Positive	A (True Positive)	B (False Positive)	A+B
TVUS Negative	C (False Negative)	D (True Negative)	C+D
Total	A+C	B+D	

To assess the diagnostic performance of transvaginal ultrasound a 2×2 contingency table (Table 2.1.) was constructed. The following parameters were calculated:

- Sensitivity= $(A/A+C) \times 100\%$

- Specificity= $(D/B+D) \times 100\%$
- Positive predictive value= $(A/A+B) \times 100\%$
- Negative predictive value= $(D/C+D) \times 100\%$
- Accuracy= $((A+D)/(A+B+C+D)) \times 100\%$

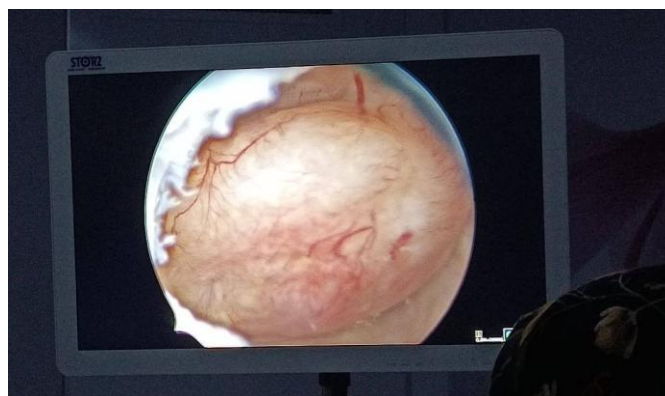


Figure 2.1: Hysteroscopic gross image

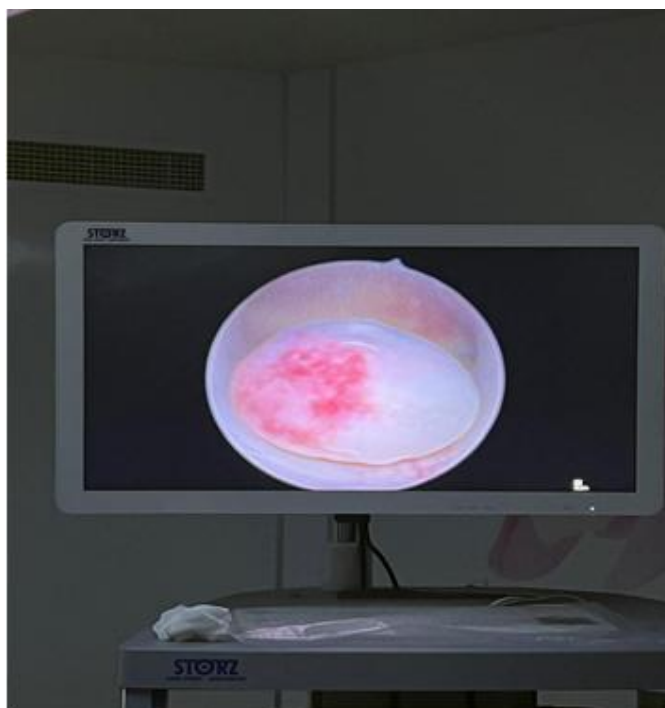


Figure 2.2: Intraoperative hysteroscope image showing endometrial polyps.

III. RESULTS

This study included 60 postmenopausal women their age ranged from 50 to 81 years, with a mean age of 60.7 ± 8.4 years. The time since menopause ranged from 1 to 27 years, with a mean duration of 8.8 ± 5.8 years.

Parity ranged from 0 to 12, 10% of the women were nulliparous, 20% had 1–3 births, 41.7% had 4–6 births, and 28.3% had seven or more births. As shown in table 3.1.

Three patients (5%) of the women had positive family history of breast cancer. Hypertension was the most common associated chronic disease in 37 women (61.7%). Obesity affected 36 patients (60%), 20 patients had diabetes mellitus

(33.3%) and 7 patients (11.7%) were smokers. As shown in table 3.2.

TABLE 3.1: Socio demographic and clinical characteristics of the study sample (n=60)

Variable	Frequency	Percent
Age (years)		
50-59	29	48.3
60-69	24	40.0
≥70	7	11.7
Mean ± SD	60.7 ± 8.4	
Range	50-81	
Parity		
Nullipara	6	10.0
1-3	12	20.0
4-6	25	41.7
7+	17	28.3
Time since menopause (years)		
Mean ± SD	8.8 ± 5.8	
Range	1-27	

TABLE 3.2: Clinical characteristics of the study sample (n=60)

Variable	Frequency	Percent
Family history		
Breast cancer	3	5.0
Endometrial cancer	0	0.0
Colon cancer	0	0.0
Risk factors		
Hypertension	37	61.7
Obesity	36	60.0
Diabetes Mellitus	20	33.3
Smoking	7	11.7

38 women (63.3%) presented with spotting, 20 women (33.3%) had slight bleeding, and 2 women (3.3%) had heavy bleeding.

Two women (3.3%) had bleeding for less than one week, 39 women (65.0%) had bleeding for 1-4 weeks, and 19 women (31.7%) had bleeding for more than 4 weeks. The duration ranged from 2 days to 5 years, with a mean of 15.1 ± 6.3 days. Only 3 women (5.0%) reported having abdominal pain, while 57 women (95.0%) had no pain. As shown in table 3.3.

TABLE 3.3: Characteristics of postmenopausal bleeding

Variable	Frequency	Percent
Pattern of vaginal bleeding		
Spotting	38	63.3
Slight	20	33.3
Heavy	2	3.3
Duration of bleeding		
<1 week	2	3.3
1-4 weeks	39	65.0
>4 weeks	19	31.7
Mean ± SD	15.1 ± 6.3	
Range	2 days - 5 years	
Associated abdominal pain		
Yes	3	5.0
No	57	95.0

All patients underwent transvaginal ultrasound and 27 women (45.0%) had bulky uterus, while 33 women (55.0%) had a normal uterus.

Endometrial thickness ranged from 4.6 mm to 48 mm, with a mean of 15.2 ± 9.3 mm.

Endometrial polyps were seen in 9 women (15.0%), Submucosal fibroids in 5 women (8.3%), and other abnormalities including cystic changes, heterogenous echogenicity and diffuse adenomyosis were seen in 3 patients (5.0%). TVUS showed no local pathology in 43 women (71.7%). As shown in table 3.4.

TABLE 3.4: Transvaginal Ultrasound Findings

Variable	Frequency	Percent
Uterine size		
Bulky uterus	27	45.0
Normal	33	55.0
Endometrial thickness (mm)		
≤10 mm	11	18.3
10-19 mm	33	55.0
≥20 mm	16	26.7
Mean ± SD	15.2 ± 9.3	15.2 ± 9.3
Range	4.6 - 48	4.6 - 48
Local pathology		
Endometrial polyp	9	15.0
Submucosal Fibroid	5	8.3
Others	3	5.0
No local pathology	43	71.7

All patients had hysteroscopy and the lesions directly visualized during hysteroscopy

were endometrial polyps in 41 women (68.3%). Thick hypervascular endometrium in 12 women (20%). Atrophic endometrium in 5 women (8.3%), fibroids in 2 women (3.3%), and normal findings in 1 woman (1.7%). As shown in figure 3.1.

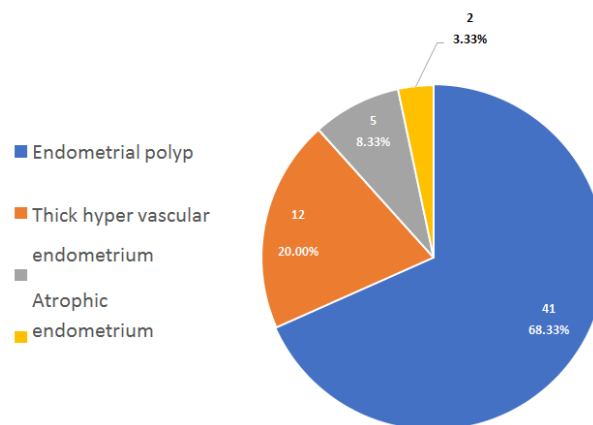


Figure 3.1: Hysteroscopic gross findings among the study sample patients (n=60)

Tissue sample taken during hysteroscope were sent for histopathology and the final tissue diagnosis for the samples showed that histopathology confirmed endometrial polyps in 40 Patients (66.7%).

Endometrial carcinoma was diagnosed in 4 patients (6.7%). Atrophic endometrium was seen in 4 women (6.7%). Proliferative endometrium was also were seen in 4 women (6.7%). Simple hyperplasia without atypia was found in 3 women (5%). Endometrial hyperplasia with atypia was found in 2 women (3.3%). Fibroids were identified in 1 woman

(1.7%), and normal endometrium in 2 women (3.3%). As shown in figure 3.2.

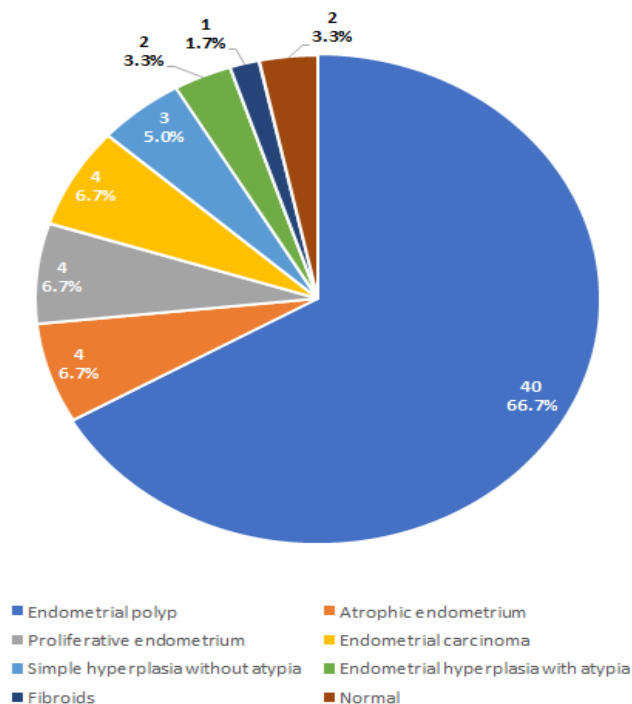


Figure 3.2: Histopathological findings among the study sample patients (n=60)

TVUS suggested the presence of an endometrial polyp in 9 cases, of which 8 were confirmed histopathologically as true polyps and one case was false positive. TVUS reported absence of a polyp in 51 cases; however, 32 of these were actually histopathology-positive for polyps and only 19 were truly negative. As shown in table 3.5.

TABLE 3.5: Cross tabulation of TVUS findings with the final histopathology results

TVUS Result	Histopathology Positive	Histopathology Negative	Total
Positive	8	1	9
Negative	32	19	51
Total	40	20	60

hysteroscopy grossly identified endometrial polyps in 41 cases, 40 of which were confirmed by histopathology as true polyps, with only one false-positive case. Nineteen cases were reported as having no polyp by hysteroscopy, and all were confirmed as polyp-negative on histopathology, with no false-negative results. As shown in table 3.6.

TABLE 3.6: Cross tabulation of hysteroscopic gross findings with the final histopathology results

Hysteroscopic gross findings	Histopathology Positive	Histopathology Negative	Total
Positive	40	1	41
Negative	0	19	19
Total	40	20	60

TVUS showed a sensitivity of 20%, specificity of 95%, positive predictive value of 88.89%, negative predictive value of 37.25%, and an overall diagnostic accuracy of 45% for the detection of endometrial polyps.

hysteroscopy showed a sensitivity of 100%, specificity of 95%, positive predictive value of 97.56%, negative predictive value of 100%, and an overall diagnostic accuracy of 98.33%, for the detection of endometrial polyps. As shown in table 3.7.

TABLE 3.7: Diagnostic performance hysteroscope and TVUS in detecting endometrial polyps.

Parameter	Hysteroscopy	TVUS
Sensitivity	100%	20%
Specificity	95%	95%
Positive Predictive Value (PPV)	97.56%	88.89%
Negative Predictive Value (NPV)	100%	37.25%
Accuracy	98.33%	45%

IV. DISCUSSION

The present study included 60 postmenopausal women with a mean age of 60.7 ± 8.4 years and a long postmenopausal duration (mean 8.8 years). Most women were multiparous, and with hypertension, obesity, and diabetes were highly prevalent, consistent with known risk factors for endometrial proliferative disorders [Ali AT,2014].

In this study the prevalence of endometrial polyps was 68.3% among postmenopausal women. Previous studies have reported a prevalence of endometrial polyps exceeding 40% in women with postmenopausal bleeding [Golan A, et al., 2001], [Hassa H, et al., 2006]. [Ben- Arie A ,et al., 2004] observed polyps in 54.9% of asymptomatic patients.

Similarly, the [Orvieto R, et al., 1999]. study found polyps in 65% of women via routine ultrasonography, while 23% displayed images suggestive of polyps and 75% had a thickened or irregular endometrium.

The high prevalence of hypertension, obesity and diabetes in the current study (HTN 61.7%, obesity 60%, DM 33.3%) is similar to [Flayah MJ, et al., 2024]. study in Al-Imamain Al-Kadhumain, and Baghdad Medical City that also reported large proportions of overweight/obese and hypertensive patients among PMB women and higher rates of metabolic risk factors in those with polyps or hyperplasia.

The majority of patients were presented with spotting or slight vaginal bleeding, and only a minority had heavy bleeding or associated pain. This confirms that endometrial polyps in postmenopausal women often present with mild but persistent bleeding patterns rather than acute severe hemorrhage. Most patients who present with spotting seek early medical advice to fear of an underlying malignancy, which prompts earlier evaluation. this aligns with a review by [Nijkang NP, et al., 2019]. that also mentioned that endometrial polyps are mostly asymptomatic lesions, though they can present with abnormal uterine bleeding.

TVUS findings showed that endometrial thickness was increased in many patients (mean 15.2 ± 9.3 mm), only 9/60 (15%) showed endometrial polyps. while in hysteroscopy directly visualized polyps in 41/60 (68.3%) of the patients, in histopathology the rate was 40/60 (66.7%). This show the limitation of TVUS in detecting focal intrauterine lesions,

particularly small or sessile polyps that may be obscured within a thickened or heterogeneous endometrium. this is consistent with [Vitner D, *et al.*, 2013]. study that concluded that in uterine pathologies “including polyps” diagnostic hysteroscopy is required; as transvaginal sonography is not sufficient.

The current study found that transvaginal ultrasonography (TVUS) detected endometrial polyps in 9 cases, of which 8 were confirmed histopathologically, while 32 cases with negative TVUS results were histopathology-positive, indicating a high rate of false negatives. This yielded a low sensitivity (20%) but high specificity (95%) and positive predictive value (88.9%), showing that TVUS have limited ability to exclude polyps. This aligns with [de Godoy Borges PC, *et al.*, 2015]. study on 281 postmenopausal women aged 41–82 years with abnormal uterine bleeding or increased endometrial thickness (≥ 5 mm) were they compared transvaginal ultrasound (TVS) and ambulatory hysteroscopy for diagnosing endometrial polyps and found that ultrasound detected polyps in 22.8% of cases, while hysteroscopy identified them in 80.8%. TVUS showed high sensitivity (88.7%) but low specificity (25.4%) and moderate overall accuracy (75.4%). Hysteroscopy demonstrated superior diagnostic performance with 96.4% sensitivity, 74.6% specificity, and 91.8% accuracy. they concluded that hysteroscopy is more reliable than ultrasound, which alone is insufficient for accurately diagnosing endometrial polyps in postmenopausal women.

While [Kelekci S, *et al.*, 2005]. study reported ultrasonography sensitivity of 72% and specificity of 50.8%, compared with 94.4% sensitivity and 58.6% specificity for hysteroscopy

reported diagnostic accuracies of 61.2% for ultrasonography and 73.1% for hysteroscopy. [Yela DA, *et al.*, 2009]. and [Arbozi S, *et al.*, 2007]. reported 60% for ultrasonography.

While a study in Egypt by [Ahmed ET, *et al.*] showed that using enhanced ultrasound techniques resulted in higher detection of endometrial polyps. Three Dimensional Transvaginal Ultrasonography and saline infusion sonohysterography series achieve higher polyp detection rates and sensitivity than Two Dimensional Transvaginal Ultrasonography alone, they concluded that conventional TVUS is limited particularly with thick or heterogeneous endometrium.

Regarding hysteroscopy, the current study found that 41 women were identified with polyps on gross hysteroscopic examination, of which 40 were confirmed histologically, with no false negatives and only one false positive. This reflects a sensitivity of 100%, specificity of 95%, and overall diagnostic accuracy of 98.3%. This aligns with studies describing hysteroscopy as the gold standard for intrauterine lesion detection, with sensitivities and accuracies typically exceeding 90% [Xia Z, 2022], [Varlas V, *et al.*, 2021].

Single false-positive cases was attributed to lesions that look like polyps grossly and resemble it in appearance but later may be histopathologically diagnosed to have malignant transformation. this was also reported in [da Silva Wanderley,

et al.]. study where hysteroscopy achieved over 90% diagnostic accuracy while TVUS demonstrated moderate accuracy of 65.9% for polyps, they attributed false-positive cases in hysteroscopy to vascular or hyperplastic mimics that resemble polyps on gross inspection

V. CONCLUSIONS

1. Endometrial polyps were common histopathological finding in women with postmenopausal bleeding.
2. Transvaginal ultrasonography showed high specificity but very low sensitivity and negative predictive value for detecting endometrial polyps.
3. Hysteroscopy demonstrated excellent diagnostic performance with excellent sensitivity, specificity, and overall accuracy.
4. Some patients had malignant or premalignant endometrial lesions showing the importance of tissue diagnosis.
5. Hysteroscopy with biopsy remains the gold standard for accurate diagnosis of intrauterine pathology.

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