"CORRELATION OF ENDOMETRIAL THICKNESS BY TRANS-VAGINAL SONOGRAPHY [TVS] AND HISTOPATHOLOGY IN WOMEN WITH ABNORMAL PERI-MENOPAUSAL AND POSTMENOPAUSAL BLEEDING – A PROSPECTIVE STUDY"

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Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"CORRELATION OF ENDOMETRIAL THICKNESS BY TRANS-VAGINAL SONOGRAPHY (TVS) AND HISTOPATHOLOGY IN WOMEN WITH ABNORMAL PERI-MENOPAUSAL AND POSTMENOPAUSAL BLEEDING- A PROSPECTIVE STUDY",** is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee.

(Dr. Smita Sonoli)
Member Secretary
JNMC Institutional Ethics Committee
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(Dr. Harsha Hegde)
Chairman,
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LIST OF ABBREVIATIONS USED

GLOSSARY	ABBREVIATIONS
AUB	Abnormal Uterine Bleeding
TVS	Trans-Vaginal Sonography
ET	Endometrial Thickness
HPE	Histopathological Examination
PMB	Postmenopausal Bleeding
D&C	Dilatation and Curettage
HRT	Hormone Replacement Therapy
FIGO	International Federation of Gynecology and Obstetrics
PALM-COEIN	Polyp, Adenomyosis, Leiomyoma, Malignancy/Hyperplasia – Coagulopathy, Ovulatory dysfunction, Endometrial, Iatrogenic, Not yet classified
PCOS	Polycystic Ovary Syndrome
SIS	Saline Infusion Sonohysterography
BMI	Body Mass Index
ANOVA	Analysis of Variance
SD	Standard Deviation
PPV	Positive Predictive Value
NPV	Negative Predictive Value
SAE	Serious Adverse Event

ABSTRACT

Introduction: Abnormal uterine bleeding (AUB) is a prevalent clinical concern in peri-menopausal and postmenopausal women and may be indicative of underlying endometrial pathology ranging from benign hyperplasia to malignancy. Transvaginal sonography (TVS) serves as a non-invasive imaging modality to assess endometrial thickness (ET), but histopathological confirmation remains the diagnostic gold standard.

Objectives:

- **Primary Objective:** To correlate transvaginal endometrial thickness with histopathological findings in peri-menopausal and postmenopausal women with AUB.
- **Secondary Objective:** To assess the efficacy of TVS in depicting endometrial patterns suggestive of pathology.

Material and Methods: A prospective study was conducted on 100 women aged 40 years and above presenting with AUB. All patients underwent TVS for measurement of endometrial thickness, followed by histopathological evaluation of endometrial tissue obtained through D&C, hysteroscopic sampling, or hysterectomy. Data were analyzed using descriptive statistics, chi-square test, and ANOVA to assess the correlation between ET and histological findings.

Results: Among the participants, 77% were peri-menopausal and 23% postmenopausal. Menorrhagia (41%) was the most common bleeding pattern. TVS revealed that 34% of women had ET >10 mm. Histopathological examination showed endometrial hyperplasia without atypia in 41%, proliferative endometrium in 25%,

and atrophic endometrium in 10% of cases. A statistically significant correlation ($p < 0.001$) was observed between increased ET and the presence of hyperplastic changes. In postmenopausal women, ET ≤4 mm was highly predictive of atrophic endometrium (83.3%).

Conclusion: TVS is a valuable first-line, non-invasive modality in evaluating AUB and guiding further histopathological assessment. A strong correlation exists between ET and endometrial pathology, particularly hyperplasia in women with ET >10 mm. ET ≤4 mm reliably predicts atrophic endometrium, especially in postmenopausal women. The integration of TVS findings with clinical parameters can enhance diagnostic accuracy and help avoid unnecessary invasive procedures.

Keywords: Abnormal uterine bleeding, endometrial thickness, transvaginal sonography, histopathology, peri-menopausal, postmenopausal, endometrial hyperplasia, non-invasive diagnosis.

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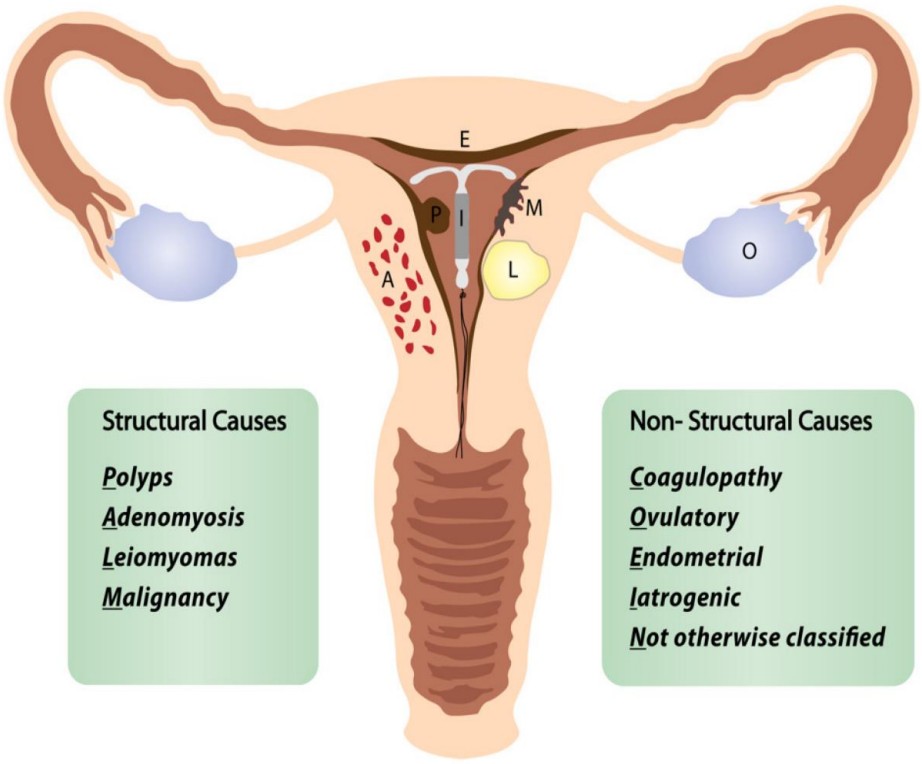
INTRODUCTION

Abnormal uterine bleeding (AUB) is a common condition frequently encountered by gynaecologists and is responsible for about one-third of all outpatient gynaecological visits, particularly among women in the perimenopausal stage[1]. Over 90% of women encounter at least one episode of AUB, with 78% experiencing three or more episodes while transitioning to menopause[1]. One significant concern associated with AUB, especially in older women, is endometrial cancer, which frequently presents as abnormal uterine bleeding[2]. Postmenopausal bleeding (PMB) is becoming increasingly common, influenced by longer life expectancy, rising obesity rates, and the widespread use of hormone replacement therapy (HRT)[3]. As many cases of endometrial cancer occur after menopause, any abnormal bleeding must be thoroughly investigated[4].

Endometrial biopsy remains the diagnostic gold standard for AUB. However, transvaginal sonography (TVS) has emerged as a non-invasive and effective tool, particularly in assessing endometrial thickness (ET)[5]. For perimenopausal women, dilation and curettage (D&C) may be performed, when necessary, though TVS is usually preferred, especially in postmenopausal patients[6].

AUB in perimenopausal and postmenopausal women frequently suggests underlying endometrial pathology. Hormonal changes during perimenopause can cause irregular bleeding, while PMB may indicate conditions such as hyperplasia or malignancy. PMB, defined as bleeding occurring 12 months after amenorrhea, should prompt evaluation, as about 10% of such cases are linked to endometrial cancer [7].



To systematize diagnosis, FIGO introduced the PALM-COEIN classification for AUB, grouping causes into structural (Polyp, Adenomyosis, Leiomyoma, Malignancy/Hyperplasia) and non-structural (Coagulopathy, Ovulatory dysfunction, Endometrial, Iatrogenic, and Not otherwise classified) categories [8].

Obesity, polycystic ovary syndrome (PCOS), and unopposed estrogen therapy increase the risk of endometrial cancer[9]. Obesity enhances peripheral estrogen conversion, and PCOS is associated with chronic anovulation[10]. TVS is vital in these high-risk patients, offering a non-invasive method to assess ET. An ET ≤4 mm in postmenopausal women suggests low cancer risk, while ET >5 mm warrants further investigation [5,11].

TVS can also detect abnormalities such as fibroids and endometrial polyps, and it assesses echotexture and vascularity. Irregular texture and increased blood flow often suggest malignancy[12]. However, TVS is less effective in obese patients and cannot

definitively distinguish between benign and malignant conditions, necessitating histopathological evaluation in suspicious cases[13].

Saline infusion sonohysterography (SIS) and 3D ultrasonography may improve diagnostic accuracy when used alongside TVS[14]. Doppler imaging can further aid by evaluating vascular patterns typically altered in malignancy[15]. Despite these advances, histopathological confirmation remains essential for diagnosis[16].

A significant challenge is defining standardized ET cutoffs, especially in perimenopausal women, where hormonal variability affects endometrial appearance. Differences in recommended thresholds lead to inconsistencies in clinical decisions [17]. Standardization could improve early detection while reducing unnecessary procedures. TVS should always be interpreted in conjunction with clinical findings and histopathological results where indicated.

HRT can increase ET in postmenopausal women, potentially leading to overdiagnosis and unnecessary biopsies [3]. Therefore, future research must refine ET thresholds and develop risk-based stratification models to guide better clinical decisions [17].

This study aims to explore the correlation between TVS-measured endometrial thickness and histopathological findings in perimenopausal and postmenopausal women with AUB. As postmenopausal bleeding becomes more common, TVS remains a crucial first-line diagnostic modality.

NEED OF THE STUDY

Abnormal uterine bleeding (AUB) in peri-menopausal and postmenopausal women is a significant clinical concern due to its association with endometrial pathology, ranging from benign conditions like endometrial polyps and hyperplasia to malignant transformation such as endometrial carcinoma. Given that postmenopausal bleeding (PMB) is often the first and sometimes the only warning sign of endometrial malignancy, early and accurate diagnosis is essential for improving patient outcomes [18].

Transvaginal Sonography (TVS) has gained widespread acceptance as a non-invasive, first-line diagnostic tool for evaluating endometrial thickness (ET) and abnormalities in women with AUB [19]. However, despite its high sensitivity, TVS alone cannot reliably differentiate between benign and malignant endometrial changes, necessitating further histopathological correlation for definitive diagnosis [20].

Therefore, this study is essential to evaluate the diagnostic accuracy of TVS-measured ET and its correlation with histopathological findings, thereby improving the screening and management protocols for AUB [21].

Abnormal uterine bleeding (AUB) in peri-menopausal and postmenopausal women is a significant concern due to its association with endometrial pathology, including benign conditions and endometrial carcinoma [18,22]. Postmenopausal bleeding (PMB) is often the first sign of malignancy, making early diagnosis critical for better outcomes [18].

Transvaginal Sonography (TVS) is commonly used to assess endometrial thickness (ET), but its inability to reliably distinguish between benign and malignant changes

requires histopathological confirmation [20,23]. This study is essential to evaluate the accuracy of TVS-measured ET and its correlation with histopathological findings, improving screening and management of AUB [24].

The lack of standardized ET cutoff values, particularly for peri-menopausal women with fluctuating hormones, poses a diagnostic challenge [21]. Establishing evidence-based ET thresholds will reduce false positives and negatives, ensuring more precise and timely intervention.

Given the rising incidence of endometrial hyperplasia and carcinoma, especially in women with obesity, PCOS, and metabolic syndrome, accurate and cost-effective screening is crucial [25]. TVS is an ideal first-line tool, but without clear ET cutoffs and histopathological validation, its clinical utility is limited [20,24].

This study aims to optimize TVS's role in diagnosis, reduce unnecessary procedures, and enhance patient management. In resource-limited settings, TVS is a cost-effective, accessible tool that can improve early detection and reduce mortality from endometrial carcinoma [22,25]. Recent studies continue to affirm the diagnostic accuracy of TVS when correlated with histopathological findings, reinforcing its utility in diverse clinical settings [26].By refining ET thresholds and integrating clinical risk factors, this research will enhance the use of TVS in endometrial pathology, improving patient care and outcomes.

AIMS AND OBJECTIVES

Aims:

The present study aims to correlate the diagnosis of endometrial thickness by Trans-Vaginal Sonography [TVS] and histopathology in women with abnormal peri-menopausal andpostmenopausal bleeding.

Objectives:

- Primary objective- To correlate transvaginal endometrial thickness with histopathology of endometrium in peri-menopausal and postmenopausal AUB.
- Secondary objective - To determine the efficacy of transvaginal ultrasound in depicting the pattern of endometrium.

REVIEW OF LITERATURE

Review of previous studies

1. **Mendiratta S, et al. (2023)** – conducted a prospective observational study involving 60 postmenopausal women presenting with abnormal uterine bleeding (AUB), aiming to assess the diagnostic utility of transvaginal sonography (TVS) in measuring endometrial thickness (ET) and correlating it with histopathological findings obtained via biopsy. In this study, TVS was employed as the first-line, non-invasive modality, follSowed by either dilation and curettage (D&C) or hysteroscopy-guided endometrial biopsy for definitive histological diagnosis. Among the study population, 24 patients (40%) exhibited an endometrial thickness of less than 4 mm. Histopathological evaluation in this group revealed atrophic endometrium in 23 cases (38.3% overall), suggesting a benign and low-risk etiology for the bleeding in the majority of these women. Meanwhile, 15 patients (25%) had an ET between 5–10 mm, among whom proliferative or secretory endometrium was the predominant finding, indicating a functional or hormonal cause of bleeding rather than structural or neoplastic lesions. [27]

Importantly, 21 women (35%) showed an ET greater than 10 mm. In this subgroup, hyperplasia without atypia was found in 14% of cases, hyperplasia with atypia in 9.3%, and endometrial carcinoma in 13.3% (8 cases), establishing a strong association between increased ET and premalignant or malignant histopathological outcomes. The sensitivity and specificity of TVS in detecting endometrial pathology were reported as 96.77% and 96.55%, respectively, when correlated with biopsy results. Additionally, the positive predictive value (PPV) was 93.94%, and the negative predictive value (NPV) was 98.21%, further supporting the reliability of TVS in screening and triaging

patients with AUB. These results emphasize that a thin endometrium (<4 mm) on TVS is highly predictive of atrophic changes, thereby reducing the necessity for invasive sampling in low-risk patients. Conversely, a thickened endometrium (>10 mm) should prompt further investigation through hysteroscopy and biopsy, as the likelihood of detecting significant pathology such as hyperplasia or carcinoma increases substantially. This study thus reinforces the role of TVS not only in non-invasively identifying endometrial abnormalities but also in guiding clinical decisions regarding the need for histological confirmation. [27]

2. **Gupta R, et al. (2023)** – carried out a cross-sectional observational study on 100 postmenopausal women who presented with abnormal uterine bleeding (AUB). The primary objective was to assess the correlation between endometrial thickness (ET), as measured through transvaginal sonography (TVS), and the final histopathological diagnosis obtained through endometrial biopsy. TVS was performed as the initial diagnostic modality, and women with an endometrial thickness greater than 5 mm were considered at higher risk of harboring significant endometrial pathology. Among the 100 participants, 68 women were found to have an endometrial thickness of more than 5 mm, while the remaining 32 had ET ≤5 mm. Of the 68 women with ET >5 mm, histopathology revealed that 24 had endometrial hyperplasia and 11 were diagnosed with endometrial carcinoma, accounting for 35 patients (51.5%) with significant pathology in this subgroup. In contrast, among those with ET ≤5 mm, the majority had benign or atrophic endometrium, with no cases of malignancy reported in this group. [28]

This stratification highlighted a statistically significant correlation between increased endometrial thickness and abnormal histopathological outcomes. The study calculated that the sensitivity of TVS for detecting any form of endometrial pathology (including hyperplasia and malignancy) was 78%, while specificity stood at 92%. The positive predictive value (PPV) was reported at 85.3%, and the negative predictive value (NPV) was 88.5%, indicating that while TVS was slightly less sensitive than in some other studies, it still demonstrated excellent diagnostic precision in identifying high-risk individuals. The absence of malignancy in women with ET ≤5 mm supports the argument for using this threshold to reduce unnecessary invasive procedures in low-risk patients. Conversely, the high incidence of pathology in those with ET >5 mm emphasizes the importance of prompt histopathological evaluation in this subgroup. The findings of Gupta et al. reinforce the utility of TVS as a frontline, non-invasive tool to guide clinical decision-making and triage patients effectively for biopsy, thereby optimizing both diagnostic accuracy and patient safety. [28]

3. **Thulasi P, et al. (2023)** – conducted a prospective analytical study involving 75 women from peri- and postmenopausal age groups presenting with abnormal uterine bleeding (AUB). The study aimed to determine the correlation between endometrial thickness (ET), as measured through transvaginal sonography (TVS), and histopathological findings, with particular emphasis on the identification of hyperplasia and carcinoma. TVS was used as a first-line diagnostic modality due to its non-invasive nature, and patients with thickened endometrium were subsequently selected for endometrial sampling. Based on the sonographic findings, patients were stratified into groups according to their endometrial thickness: ET <5 mm, 5–8 mm, 8–10 mm, 10–14 mm, and >14 mm. [29]

Among the 75 participants, a total of 30 women (40%) were diagnosed with endometrial hyperplasia upon histopathological evaluation. Of these, 25 patients (33.3%) had simple hyperplasia without atypia, while 5 patients (6.66%) exhibited hyperplasia with atypia, which carries a higher risk for progression to malignancy. Additionally, 4 patients (5.33%) were diagnosed with endometrial carcinoma, all of whom had an ET greater than 14 mm on transvaginal sonography. The study reported that the most common endometrial thickness range associated with benign proliferative or secretory endometrium was 8–10 mm, whereas a significantly increased risk of atypical hyperplasia and carcinoma was observed in patients with ET >14 mm. No malignant pathology was found in patients with ET <8 mm, which reinforces the diagnostic threshold used in many clinical guidelines. [29]

The statistical correlation between endometrial thickness and histopathological diagnosis was found to be highly significant ($p<0.001$). The diagnostic performance of TVS in detecting premalignant or malignant lesions was also evaluated. In women with ET >14 mm, the positive predictive value (PPV) for detecting carcinoma or atypical hyperplasia was over 85%, while the negative predictive value (NPV) for ET <8 mm in ruling out malignancy exceeded 90%. These results suggest that TVS is a valuable triaging tool to distinguish between low-risk and high-risk patients. Importantly, this study demonstrated that TVS-guided ET measurement could effectively reduce unnecessary biopsies in low-risk patients while ensuring timely detection and histological confirmation in those with suspected pathology. Thulasi et al.'s findings contribute further evidence in support of individualized clinical decision-making based on ET parameters, particularly in peri- and postmenopausal populations where AUB is a common but often diagnostically challenging complaint. [29]

4. **Akshata AC, et al. (2023)** – conducted a large-scale observational study involving 247 women in the peri- and postmenopausal age group who presented with abnormal uterine bleeding (AUB). The primary aim was to assess the correlation between endometrial thickness (ET) measured via transvaginal sonography (TVS) and the spectrum of histopathological findings obtained from endometrial biopsies. All participants underwent pelvic examination followed by TVS, and endometrial biopsy was performed either by curettage or under hysteroscopic guidance depending on clinical indication. Patients were categorized into different ET groups to examine the distribution of histopathological outcomes across thickness ranges: ET ≤4 mm, 5–10 mm, 11–14 mm, and >14 mm. [30]

The most common histopathological finding in the overall cohort was proliferative endometrium, observed in 57 cases (23%), followed by secretory endometrium in 33 cases (13.3%), both of which were mostly associated with ET values ranging from 5 to 10 mm. These findings represented normal or hormonal endometrial patterns, particularly in perimenopausal women with irregular cycles or unopposed estrogen exposure. In the group with ET between 5–10 mm (n ≈ 108), 71.2% showed benign pathology (proliferative or secretory), and only 6 patients (5.5%) had simple hyperplasia without atypia. [30]

Hyperplastic endometrial changes were reported in 49 women (19.8%) overall. This included 34 women (13.8%) diagnosed with simple hyperplasia without atypia, and 17 women (6.9%) with complex hyperplasia with atypia—a precursor lesion with high risk for malignant progression. Notably, 86% of the atypical hyperplasia cases (15 out of 17) were found in patients with ET >14 mm, underscoring a strong correlation between markedly increased endometrial thickness and significant pathology. [30]

Additionally, endometrial carcinoma was diagnosed in 11 women (4.4%), all of whom had an ET >14 mm, with the majority (8/11, or 72.7%) having ET values exceeding 16 mm. In contrast, no case of hyperplasia with atypia or carcinoma was identified in the ET ≤4 mm group (n = 26), confirming that a thin endometrium has excellent negative predictive value for ruling out serious pathology. [30]

Although specific sensitivity and specificity percentages were not explicitly calculated in the study, the distribution data suggested that ET >14 mm had a high positive predictive value (PPV) for detecting atypical hyperplasia and carcinoma, while ET ≤4 mm had a near 100% negative predictive value (NPV). The correlation between increasing ET and likelihood of abnormal histopathological findings was found to be statistically significant ($p < 0.001$). Based on this analysis, Akshata et al. recommended a risk-stratified approach to patient management: women with ET ≤4 mm and no high-risk features may be managed conservatively, those with ET 5–10 mm warrant individualized clinical judgment, and patients with ET >12–14 mm should undergo mandatory biopsy to exclude premalignant or malignant changes. [30]

These findings contribute significantly to the growing body of literature validating the role of TVS as a reliable, non-invasive screening method in the initial evaluation of AUB, particularly in peri- and postmenopausal women. The large sample size and detailed stratification by ET enhance the applicability of this study to clinical practice, supporting evidence-based decision-making and early detection of endometrial pathology

5. **Sharma S, et al. (2022)** – conducted a well-structured prospective study involving 180 postmenopausal women who presented with abnormal uterine bleeding (AUB), with the primary aim of evaluating the role of transvaginal

sonography (TVS) in assessing endometrial thickness (ET) and determining its predictive accuracy in detecting histopathological abnormalities. All patients underwent TVS as the first-line, non-invasive investigation to measure ET, following which patients with thickened endometrium—defined in this study as ET >4 mm—were considered for histopathological sampling through endometrial biopsy. [31]

The study stratified patients into various ET categories for analysis: ET ≤4 mm (n = 42), ET 5–10 mm (n = 70), and ET >10 mm (n = 68). Among the 42 women with ET ≤4 mm, histopathology revealed atrophic endometrium in 35 cases (83.3%), and no cases of hyperplasia or carcinoma were reported in this group, emphasizing a high negative predictive value of thin endometrium in ruling out significant pathology. In the ET 5–10 mm group, which represented the largest subset (n = 70), histopathological findings included proliferative endometrium in 19 cases (27.1%), secretory endometrium in 11 cases (15.7%), simple hyperplasia without atypia in 10 cases (14.3%), and no cases of carcinoma, suggesting that mild to moderate thickening in this range was mostly associated with functional or benign conditions. [31]

The most clinically significant findings emerged in the ET >10 mm group (n = 68). Among these women, 17 patients (25%) were diagnosed with endometrial carcinoma, and 13 patients (19.1%) were found to have hyperplasia with atypia, indicating that nearly 44.1% of patients in this group had premalignant or malignant pathology. Furthermore, it was noted that all carcinoma cases occurred in patients with ET >12 mm, with the mean ET in carcinoma cases measuring 15.6 mm (±2.1 mm), further strengthening the role of high ET as a key predictor of malignancy. Conversely, simple hyperplasia without atypia and proliferative changes were also observed in a smaller proportion of women in this group, suggesting some overlap but reinforcing that ET

>10–12 mm represents a critical threshold for initiating aggressive diagnostic follow-up. [31]

Although exact sensitivity, specificity, and predictive values were not numerically provided in the study, the distribution data strongly support the use of ET as a triaging tool. The absence of carcinoma in patients with ET ≤10 mm, and the concentration of malignancy in those with ET >12 mm, suggest both high NPV for thinner endometrium and high PPV for significantly thickened endometrium. The authors concluded that TVS serves as a highly reliable, cost-effective, and non-invasive screening modality for initial evaluation of AUB in postmenopausal women and emphasized the utility of ET >10 mm as a practical and evidence-based cutoff for recommending endometrial biopsy in high-risk patients. Sharma et al.'s study adds valuable insight into the growing consensus that endometrial thickness thresholds can be used to effectively stratify risk, avoid unnecessary interventions, and detect early malignancies in symptomatic women. [31]

6. **Ravi K, et al. (2022)** – conducted a prospective observational study involving 120 women from the peri- and postmenopausal age groups, all of whom presented with abnormal uterine bleeding (AUB). The primary objective of the study was to examine the correlation between endometrial thickness (ET) as measured by transvaginal sonography (TVS) and histopathological findings, with specific emphasis on identifying endometrial hyperplasia and carcinoma. TVS was employed as the initial diagnostic modality, offering a non-invasive, accessible means to assess endometrial morphology and thickness. Patients with increased ET—as defined by age-specific and clinical thresholds—were selected for endometrial sampling through biopsy to confirm the underlying pathology. [32]

The study population was stratified into groups based on endometrial thickness ranges: ET ≤5 mm, ET 6–12 mm, and ET >12 mm. In women with ET ≤5 mm (n = 28), the predominant histopathological findings were atrophic endometrium (64.3%), followed by proliferative or secretory endometrium (28.6%), and no malignant or hyperplastic changes were noted in this group—emphasizing the negative predictive value (NPV) of thin endometrium in both peri- and postmenopausal women. Among the ET 6–12 mm group (n = 52), histopathology showed a mixture of benign changes, including proliferative endometrium (32.7%), simple hyperplasia without atypia (19.2%), and secretory endometrium (15.4%), with only 2 cases (3.8%) of atypical hyperplasia and 1 case (1.9%) of carcinoma. [32]

The most significant diagnostic yield was observed in women with ET >12 mm (n = 40). Among them, 12 patients (30%) were diagnosed with endometrial hyperplasia—including simple hyperplasia (8 cases, 20%) and complex hyperplasia with atypia (4 cases, 10%)—and 10 patients (25%) were confirmed to have endometrial carcinoma, indicating that more than half of this group (55%) had premalignant or malignant lesions. The mean ET in carcinoma cases was 15.4 mm (±1.9 mm), reinforcing the notion that ET >12 mm is a high-risk category, warranting immediate and thorough evaluation. [32]

TVS demonstrated a sensitivity of 78% and specificity of 85% in predicting endometrial pathology (hyperplasia or carcinoma), with a positive predictive value (PPV) of 73.9% and a negative predictive value (NPV) of 87.1%. These figures indicate that while TVS may miss a small number of early or atypical cases, it remains a highly effective first-line screening tool for endometrial evaluation. The results strongly support the implementation of TVS-guided endometrial assessment in clinical

protocols, particularly using ET >12 mm as a reliable threshold for histopathological sampling, especially in women presenting with persistent or unexplained AUB. [32]

Study concluded that TVS is a valuable, non-invasive diagnostic modality that can effectively guide clinicians in identifying women at risk for significant endometrial pathology. [32] Their findings are consistent with previous studies and add to the growing evidence base advocating for risk-stratified evaluation of AUB, enabling both early detection of malignancy and avoidance of unnecessary biopsies in low-risk individuals.

7. **Singh A, et al. (2022)** – carried out a prospective observational study involving 120 women in the peri- and postmenopausal age group who presented with abnormal uterine bleeding (AUB). The primary goal of the study was to determine the diagnostic value of endometrial thickness (ET) as measured by transvaginal sonography (TVS) and its correlation with histopathological outcomes. TVS was utilized as a first-line, non-invasive imaging modality, and women whose ET exceeded clinically relevant thresholds—based on age and menopausal status—were selected for histopathological confirmation through endometrial sampling. [33]

In this study, patients were divided into groups based on their measured ET. Women with ET ≤4 mm (n ≈ 25) primarily exhibited benign findings, with atrophic endometrium being the predominant diagnosis in 76% of cases, and no cases of hyperplasia or malignancy reported in this group, confirming the high negative predictive value (NPV) of thin endometrium. In contrast, among women with ET >4 mm (n ≈ 95), histopathological examination revealed a significant increase in the incidence of pathological endometrial changes. Hyperplasia—including both simple

and complex types—was observed in 30% of cases, while endometrial carcinoma was diagnosed in 12% of the patients. The carcinoma cases were most frequently seen in those with ET >12 mm, with a reported mean ET in malignant cases of 14.7 mm (±1.5 mm). [33]

TVS showed a sensitivity of 78% and specificity of 85% for detecting abnormal endometrial pathology, including both hyperplasia and carcinoma. The positive predictive value (PPV) was calculated at approximately 70.5%, while the NPV was 89.4%, indicating that TVS is effective not only in identifying high-risk patients who require further histopathological evaluation but also in safely ruling out serious pathology in those with thin endometrium. The study reaffirmed that ET >10–12 mm should be regarded as a significant diagnostic threshold, especially in postmenopausal women with AUB. [33]

This study concluded that TVS is a reliable, non-invasive, and cost-effective screening tool for the initial evaluation of AUB, particularly when integrated with clinical risk factors such as age, menopausal status, and duration of symptoms. **[33]** Their results support the growing body of evidence advocating for routine use of TVS in gynecological triaging, emphasizing that patients with ET above the defined threshold should undergo timely biopsy to enable early detection of hyperplasia or carcinoma and to guide appropriate management.

8. **Nishita R, et al. (2021)** –conducted a prospective study involving 135 women in the peri- and postmenopausal age group who presented with abnormal uterine bleeding (AUB). The primary objective was to assess the diagnostic significance of transvaginal sonography (TVS) in evaluating endometrial thickness (ET) and to establish a correlation between TVS findings and

histopathological diagnoses obtained through endometrial biopsy. TVS was used as a non-invasive preliminary screening tool, and patients with thickened endometrium or suspicious findings were subjected to endometrial sampling for definitive histological confirmation. [34]

Participants were categorized based on ET values into clinically relevant ranges. In women with ET ≤4 mm (n ≈ 30), the histopathological findings were predominantly benign, with atrophic endometrium noted in over 80%, and no cases of hyperplasia or malignancy, thus reaffirming the high negative predictive value (NPV) of a thin endometrium, especially in postmenopausal women. The intermediate group with ET between 5–10 mm (n ≈ 60) exhibited a mix of functional endometrium (proliferative/secretory) and a few cases of simple hyperplasia without atypia. Notably, the highest diagnostic yield was observed in patients with ET >10 mm (n ≈ 45), in whom 28% were diagnosed with endometrial hyperplasia and 12% were confirmed to have endometrial carcinoma, indicating that approximately 40% of patients with ET >10 mm had significant pathology. [34]

The study reported that TVS had a sensitivity of 80% and specificity of 85% in detecting endometrial pathology. The positive predictive value (PPV) was approximately 76.5%, while the negative predictive value (NPV) was 87.5%, demonstrating that TVS is both a reliable screening tool and an effective method for ruling out significant endometrial abnormalities. The mean ET in patients with carcinoma was reported to be around 15.2 mm, with a clear cutoff threshold of >12 mm showing strong correlation with malignant or premalignant histological changes. [34]

Study concluded that TVS, due to its accessibility, non-invasiveness, and high diagnostic performance, should be routinely employed as a first-line imaging modality in the evaluation of AUB in peri- and postmenopausal women. They emphasized that patients with ET >10–12 mm should undergo timely endometrial biopsy to detect or exclude hyperplasia and malignancy, while those with ET ≤4 mm and no additional risk factors may be safely managed conservatively. [34] This study adds to the body of literature validating the use of ET thresholds on TVS as an important decision-making tool in gynecological practice.

9. **Bhatia N, et al. (2021)** – conducted a cross-sectional observational study involving 200 women, both peri- and postmenopausal, who presented with abnormal uterine bleeding (AUB). The study aimed to evaluate the diagnostic accuracy of transvaginal sonography (TVS) in predicting endometrial pathology based on endometrial thickness (ET) measurements, and to correlate these findings with results from histopathological examination (HPE) following biopsy. TVS was used as the initial, non-invasive diagnostic modality, and patients with ET >5 mm were considered for further histopathological evaluation. [35]

In this study, the majority of women with ET ≤5 mm (n ≈ 65) demonstrated benign findings on HPE, with atrophic or inactive endometrium reported in 83% of these cases, and no incidence of hyperplasia or carcinoma, supporting the high negative predictive value (NPV) of a thin endometrial lining. However, in women with ET >5 mm (n ≈ 135), the risk of endometrial pathology increased substantially. Among this group, 28% were diagnosed with endometrial hyperplasia, including both simple and complex types, and 15% were found to have endometrial carcinoma, indicating that 43% of women with ET >5 mm had premalignant or malignant changes. [35]

The sensitivity of TVS in detecting endometrial pathology (hyperplasia and carcinoma) was reported as 85%, while the specificity was 90%, demonstrating a strong diagnostic performance. The positive predictive value (PPV) was approximately 80.2%, and the negative predictive value (NPV) was 92.3%, underscoring the effectiveness of TVS not only as a screening tool but also as a risk stratification modality. The mean ET among women with carcinoma was reported to be around 15.1 mm, while women with hyperplasia without atypia typically had ET in the 8–12 mm range, and those with atypia exceeded 13 mm, confirming that the degree of thickening correlates with the severity of pathology. [35]

This study concluded that TVS is a highly effective, accessible, and reliable tool for the initial evaluation of AUB, particularly when used to guide decisions regarding the need for biopsy. They emphasized that ET >5 mm should be used as a conservative threshold for recommending further investigation in both peri- and postmenopausal women, especially those with risk factors or persistent symptoms. [35] This study reinforces the clinical relevance of TVS and supports the use of ET measurement as a non-invasive triaging tool for early detection of endometrial hyperplasia and carcinoma in symptomatic women.

MATERIALS AND METHODS

Study Design: A prospective study.

Source of Data: The present study was conducted on peri-menopausal and postmenopausal patients presenting to the gynecology outpatient department & admitted in Gynecology wards of KLE's Prabhakar Kore Charitable Hospital and Medical Research Centre with clinical presentation of abnormal uterine bleeding under going total abdominal hysterectomy or total laparoscopic hysterectomy or Dilatation and curettage and hysteroscopic endometrial sampling.

Study duration: 12 months.

Study Period: January 2024 to December 2024.

Sample Size: The sample size has been calculated using the two sided 99% confidence interval with a distance from the mean to the limits up to 2 employing the formula:

$n = Z_{\alpha/2}^2 * \sigma^2 / e^2$,

where $Z_{\alpha/2}$ is the critical value of the normal distribution at $\alpha/2$, e is the margin of error, σ^2 is the population variance.

Using the range of values of standard deviation of endometrial thickness in relation to histopathology as 0.5 to 7 by an interval of 0.5, [65], the required sample size ranged from 2 to 82.

Considering a dropout/attrition rate of 10%, the largest required sample size becomes 92. Therefore, an overall sample size of 100 were enrolled for the purpose of this study.

Sampling technique: Convenient sampling.

Inclusion Criteria: Women >/=40 years of age (peri-menopausal or postmenopausal) with AUB.

Exclusion Criteria:

- Diagnosed case of carcinoma of the genital tract.
- Pregnancy

Study protocol: Not Applicable.

Data collection procedure:

- Demographic and socioeconomic data is obtained from each participant's medical records. Participants were explained and asked to sign on the informed consent form.
- A Trans-vaginal sonography was performed prior to the proposed procedure - dilatation & curettage or hysteroscopic dilatation & curettage or laparoscopic /total abdominal hysterectomy.
- Endometrial thickness was noted as a two layer thickness in the antero-posterior dimension & the maximally thick area considered.
- Histopathology reports of the endometrial sample were collected from the Department of Pathology, JNMC Belagavi. The TVS findings of Endometrial thickness and the histopathology findings were compared and correlated.

Statistical Analysis

Descriptive Analysis:

- Qualitative data -histopathology findings are expressed as frequencies and percentages.
- Quantitative data -ET measurements are reported using mean and standard

deviation.

Inferential Analysis:

- Chi-Square Test and Fisher's Exact Test: For analyzing associations between categorical variables.
- Paired T-Test: To compare quantitative variables within groups, provided normality assumptions are met.
- One-Way ANOVA: For comparisons across multiple groups of quantitative data.

Anticipated Adverse Events and Investigations

This study did not have any serious adverse events (SAEs) during the course of data collection. However, participants have undergone routine TVS as part of their diagnostic workup. The costs associated with TVS and other investigations were borne by the principal investigator of this study.

Ethical Considerations

- Ethical approval for the study was obtained from the Institutional Ethics Committee prior to initiation. Confidentiality of participants' data is strictly maintained throughout the study.
- The trial is registered under CTRI/2024/03/063934

RESULTS

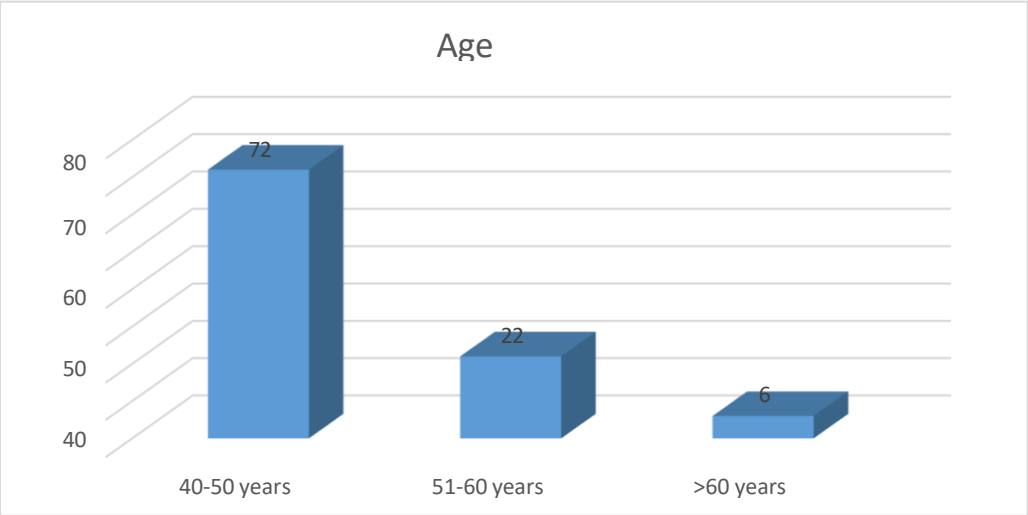
The results of this study provide a comprehensive analysis of the clinical, histopathological, and ultrasonographic findings in women presenting with abnormal uterine bleeding (AUB). Data contains measurements of 100 subjects, more than 40 years presenting with abnormal peri-menopausal and post-menopausal bleeding.

Key aspects evaluated include the distribution of clinical symptoms, parity, menstrual history, BMI, and the relationship between endometrial thickness and histopathology. The study also examines the correlation between endometrial histopathology and endometrial thickness in peri-menopausal and post-menopausal women. Detailed statistical analysis of transvaginal ultrasonography (TVS) and histopathological findings provides insights into the patterns of endometrial abnormalities associated with AUB in different age groups, offering valuable data for clinicians to enhance diagnosis and treatment strategies for women with AUB.

Table 1: Age-wise Distribution of Study Population

Age Group	Frequency (N=100)	Percent (%)
40-50 years	72	72.0%
51-60 years	22	22.0%
>60 years	6	6.0%
Total	100	100.0%

Figure 1 - : Age-wise Distribution of Study Population



The study population primarily comprised women aged 40-50 years, accounting for 72% of the total cases, followed by 22% in the 51-60 years age group and only 6% above 60 years. This distribution indicates that abnormal uterine bleeding (AUB) is more common in the peri-menopausal age group, emphasizing the need for early diagnostic evaluation. **Table 1** provides the detailed numerical breakdown of age distribution, while **Figure 1** visually represents this trend using a bar chart, reinforcing that the highest prevalence of AUB occurs during the menopausal transition.

Table 2: Distribution of Peri-Menopausal and Postmenopausal Bleeding

peri-menopausal/ postmenopausal bleeding	Frequency(N = 100)	Percent (N = 100%)
Peri-menopausal	77	77%
Post-menopausal	23	23%
Total	100	100%

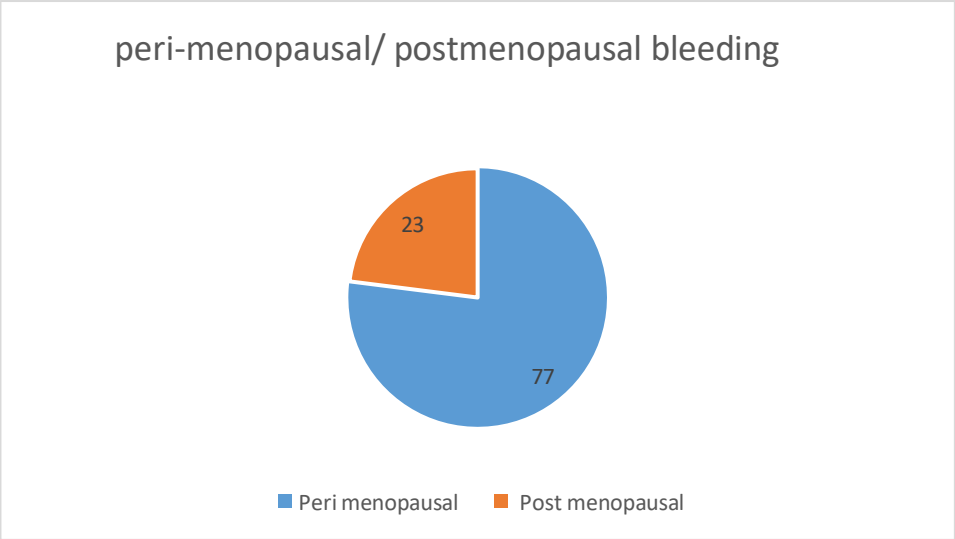


Figure 2 – Bar chart representing type of bleeding

The majority of the study participants (77%) presented with peri-menopausal bleeding, while 23% experienced postmenopausal bleeding. This indicates that abnormal uterine bleeding (AUB) is more frequently observed in the transitional phase before menopause. The higher prevalence in peri- menopausal women highlights the impact of hormonal fluctuations on menstrual irregularities. **Table 2** provides a detailed numerical representation, whereas **Figure 2** visually demonstrates this distribution through a pie chart, clearly depicting the dominance of peri-menopausal bleeding cases.

Table 3: Distribution of Bleeding Patterns in Study Population

Pattern of Bleeding	Frequency(N = 100)	Percent (N = 100%)
Menorrhagia	41	41%
Polymenorrhoea	36	36%
Post-menopausal	23	23%
Total	100	100%

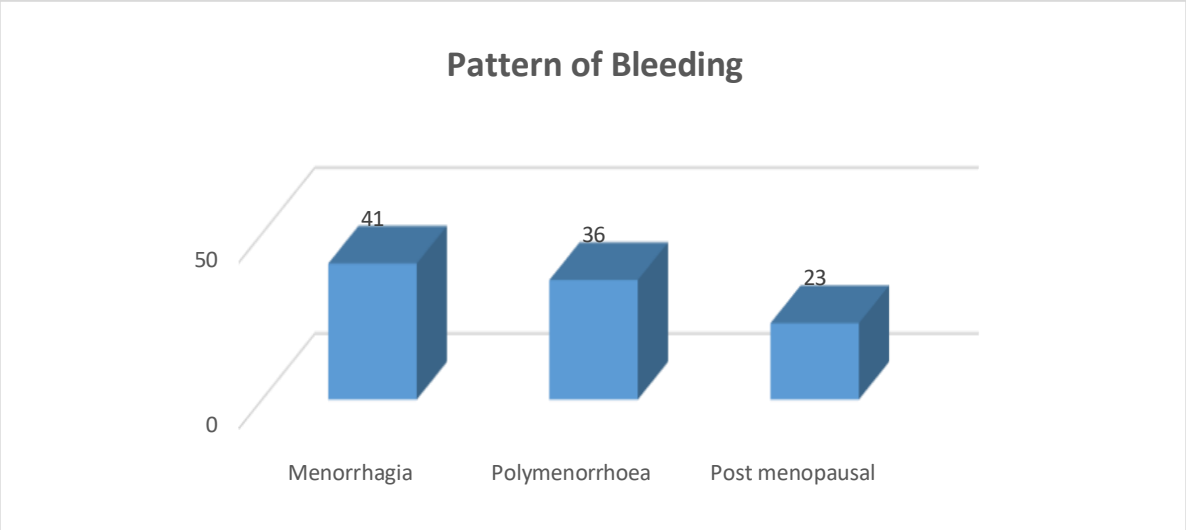


Figure 3: Bar Chart Representing Patterns of Bleeding

As seen in table 2, out of 100 participants, 41% of participants reported menorrhagia (heavy menstrual bleeding), which is the most common bleeding pattern in this study population. 36% of participants experienced Polymennorhoea **(**frequent menstrual cycles), another frequent irregularity in peri-menopausal women. 23% of participants experienced post-menopausal bleeding, a condition that can be more concerning and warrants further investigation. Table 3 provides a detailed numerical representation, whereas Figure 3 visually demonstrates the same.

Table 4: Distribution of Subjects According to Parity

Distribution of Subjects According to Parity	Frequency (N = 100)	Percent (%)	Mean(years)
Parity			
Primi	12	12.0%	
Multi	88	88.0%	
Age at First Childbirth (years)			20
Last Childbirth (years)			21

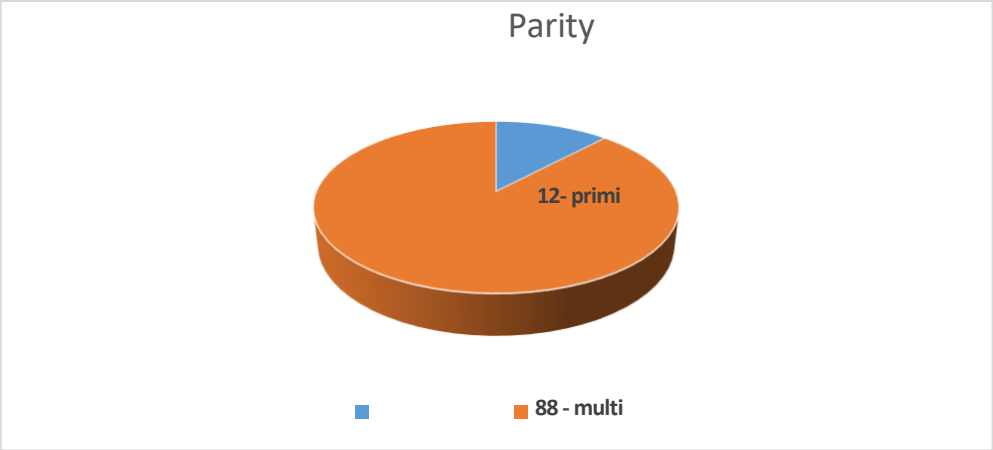


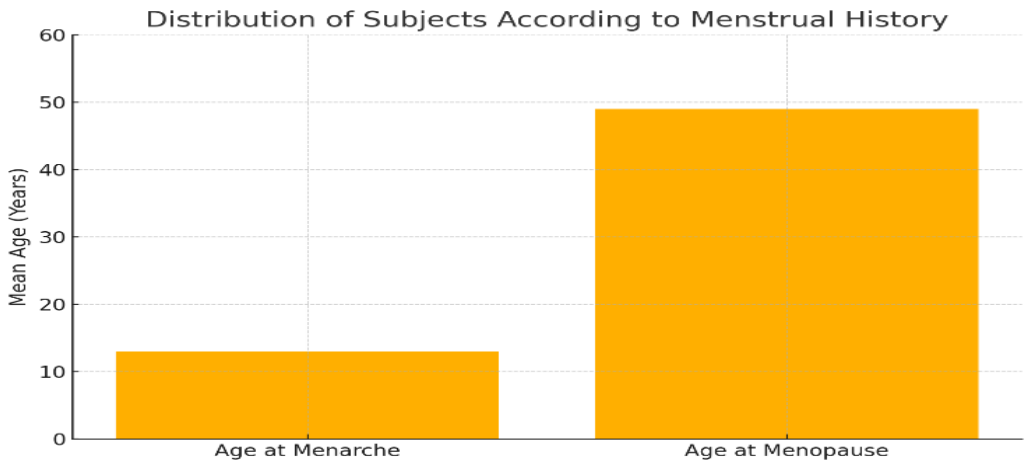
Figure 4: Bar Chart Representing Parity Distribution

As seen in Table 4, the study 88%were multiparous, meaning they had multiple pregnancies, while only 12% were primiparous, indicating that most women had experienced more than one pregnancy. The mean age at first childbirth was 20 years, with a minimum of 18 years and a maximum of 34 years, suggesting that women in the study tended to have children at a relatively young age. The mean age at last childbirth was 21 years, with a wide range from 2 years to 52 years, showing significant variation in reproductive histories. The findings provide insights into the reproductive patterns of women with AUB, with multiparity being a predominant characteristic.

Table 5: Distribution of Subjects According to Menstrual History

Distribution of subjects according to Menstrual History	Mean Age
Age at Menarche	13
Age at Menopause	49

Figure 5 – Bar chart representing mean age at menarche & menopause



Age at Menarche: The mean age at menarche was 13 years, with a standard deviation of 4.17 years. The age at menarche ranged from 10 to 53 years, indicating variability in the onset of menstruation among the women studied. The median age of 13 years suggests that the typical age of onset for menstruation was around this age.

Age at Menopause: The mean age at menopause was 49 years, with a standard deviation of 5.62 years. The ages at menopause ranged from 40 to 68 years, indicating a wide variation in the timing of menopause. The median age at menopause was 50 years, which aligns with the generally expected age range for menopause, suggesting that most women in the study experienced menopause in their late 40s to early 50s. These findings highlight the typical reproductive timeline of the women in the study, with menarche occurring at a relatively standard age and menopause occurring within the expected age range.

Table 6: Distribution of Subjects According to BMI

Group	Mean BMI(kg/m²)
Peri-menopausal	27.8
Post-menopausal	27.1
Overall	27.5

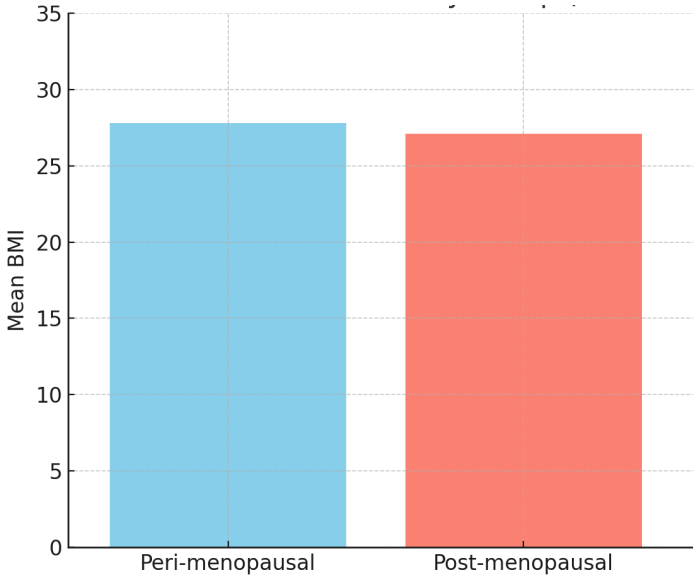


Figure 6 – Bar chart representing mean BMI of peri- menopausal & post – menopausal groups

As in table 6, Peri-menopausal Women: The **mean BMI** for peri-menopausal women is **27.8**, slightly higher than the overall average, indicating that these women are more likely to fall into the **overweight** category. The standard deviation of 2.7 suggests there is moderate variability in BMI among this group. The **median BMI** is **28.5**, indicating that more than half of the peri-menopausal participants have a BMI of **28** or higher. The BMI ranges from **18.5** (normal weight) to **31.0** (overweight), highlighting that a significant portion of peri-menopausal women have higher BMI values.

Post-menopausal Women: The **mean BMI** for post-menopausal women is **27.1**, slightly lower than that of the peri-menopausal group, but still in the **overweight**

category. The standard deviation of 2.5 indicates slightly less variability in this group compared to the peri-menopausal women. The median BMI is **27.0**, which means that more than half of the post-menopausal women have a BMI below this value, although still in the overweight range. The BMI range for post-menopausal women is from **18.0** (normal weight) to **30.5** (overweight), suggesting that this group generally has a lower BMI distribution compared to the peri-menopausal group

Both peri-menopausal and post-menopausal women tend to fall within the **overweight** range of BMI, with peri-menopausal women having slightly higher mean BMI values compared to

Table 7: Distribution of Endometrial Thickness as per Pattern of Bleeding

Endometrial Thickness (mm)	**Peri-Menopausal (N = 77)**	**Post-Menopausal (N = 23)**	**Total (N = 100)**
<4 mm	6 (50.0%)	6 (50.0%)	12 (12.0%)
>4-10 mm	40 (74.1%)	14 (25.9%)	54 (54.0%)
>10 mm	31 (91.2%)	3 (8.8%)	34 (34.0%)
Total(N = 100)	77 (77.0%)	23 (23.0%)	100 (100.0%)

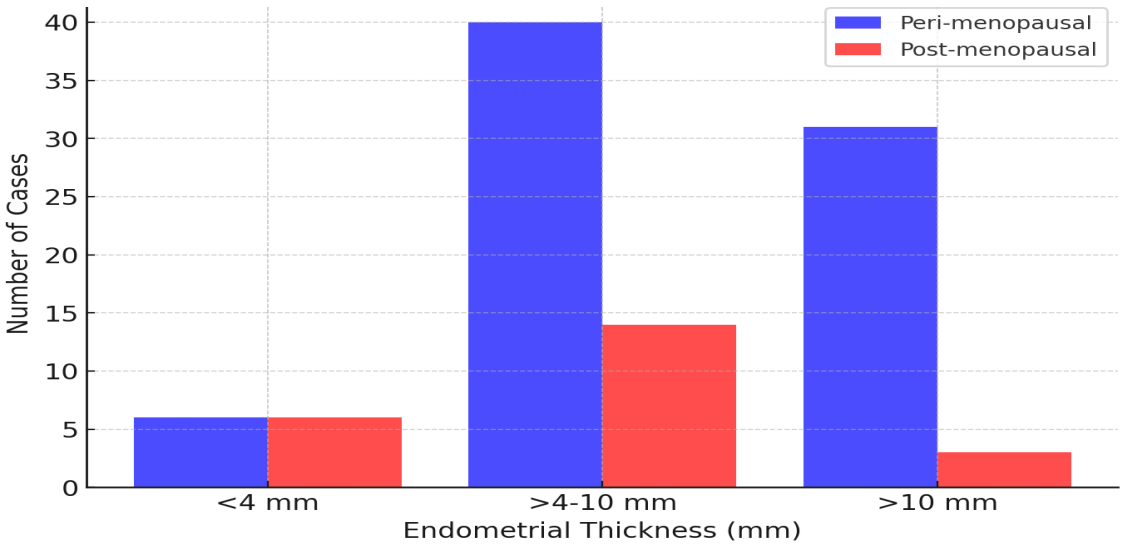


Figure 7 - Bar Chart Representing Endometrial Thickness and pattern of bleeding

The **Table 7** presents the distribution of endometrial thickness among peri-menopausal and post-menopausal women. Out of 100 women studied, 77 were peri-menopausal, and 23 were post-menopausal. Peri-menopausal women had a higher prevalence of increased endometrial thickness, with 91.2% of those with >10 mm thickness belonging to this group. Post-menopausal women were more likely to have a thinner endometrium, contributing 50.0% of cases with <4 mm thickness. The majority of women (**54%**) had an endometrial thickness in the **>4-10 mm** range. Overall, peri-menopausal women were more likely to have a thicker endometrium compared to post-menopausal women.

Table 8: Endometrial Histopathology Findings in Women with Perimenopausal & Post menopausal Abnormal Uterine Bleeding (AUB)

Endometrial Histopathology	Frequency (N=100)	Percent (%)
Atrophic Endometrium	10	10.0%
Complex Hyperplasia without Atypia	1	1.0%
Disordered Proliferative Endometrium	2	2.0%
Endometrial Hyperplasia with Atypia	1	1.0%
Endometrial Hyperplasia without Atypia	41	41.0%
Endometrial Polyp	10	10.0%
Features of Chronic Inflammation of Endometrium	1	1.0%
Pill Endometrium	4	4.0%
Proliferative Endometrium	25	25.0%
Secretory Endometrium	5	5.0%
Total	**100**	**100.0%**

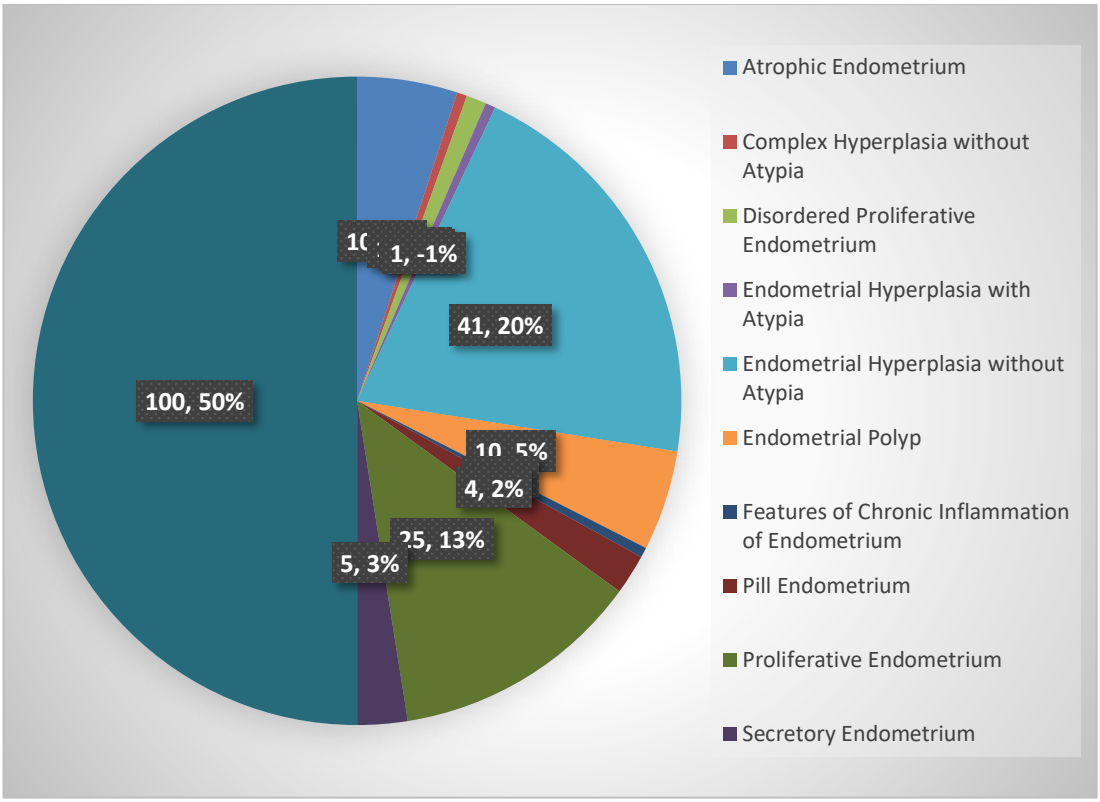


Figure 8 - Bar Chart Representing Endometrial Histopathology in Women with Perimenopausal & Postmenopausal AUB

The histopathological analysis of endometrial samples as shown in Table 8, revealed that endometrial hyperplasia without atypia was the most common finding, observed in **41%** of cases,followed by proliferative endometrium **(25%)** and atrophic endometrium **(10%).** Additionally, 10% of participants had endometrial polyps, while 5% showed secretory endometrium.

Less frequently observed conditions included disordered proliferative endometrium **(2%),** complex hyperplasia without atypia **(1%),** and features of chronic inflammation **(1%).** These findings indicate that a significant proportion of women with abnormal uterine bleeding (AUB) have underlying endometrial hyperplasia, which may necessitate further clinical monitoring. Table 8 provides a detailed breakdown of histopathological findings, while Figure 8 visually represents the distribution using a bar chart.

Table 9: Distribution of Endometrial Histopathology Findings in Postmenopausal Women with AUB

Histopathology Reports	Count(N =33)	Percent (%)
Atrophic Endometrium	8	34.8%
Complex Hyperplasia without Atypia	0	0.0%
Disordered Proliferative Endometrium	1	4.3%
Endometrial Hyperplasia with Atypia	0	0.0%
Endometrial Hyperplasia without Atypia	8	34.8%
Endometrial Polyp	2	8.7%
Features of Chronic Inflammation of Endometrium	1	4.3%
Pill Endometrium	1	4.3%
Proliferative Endometrium	2	8.7%
Secretory Endometrium	0	0.0%

As per Table 9, in post-menopausal women, the most common histopathology findings were Atrophic Endometrium and Endometrial Hyperplasia without Atypia, each occurring in 34.8% of cases. Less frequent findings included Endometrial Polyp and Proliferative Endometrium (8.7% each), while Disordered Proliferative Endometrium, Chronic Inflammation, and Pill Endometrium were observed in 4.3% of cases each. No cases of Complex Hyperplasia without Atypia, Endometrial Hyperplasia with Atypia, or Secretory Endometrium were reported.

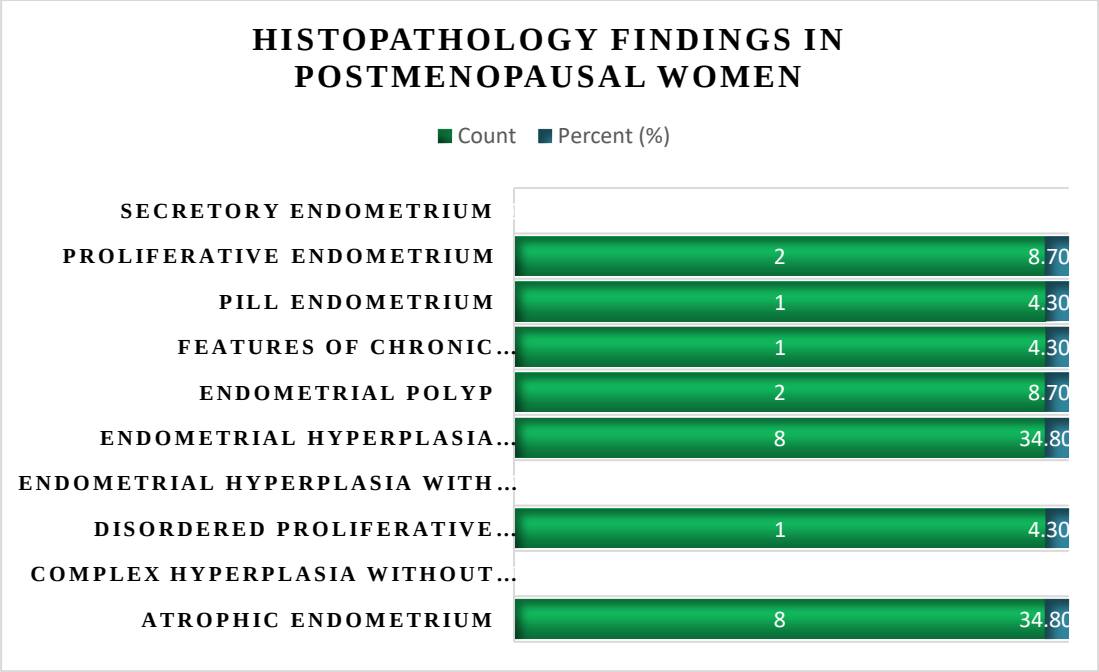


Figure 9- Distribution of Endometrial Histopathology Findings in Postmenopausal Women with AUB

Table 10 : Distribution of Endometrial Histopathology Findings in Peri-Menopausal Women with AUB

Histopathology Reports	Count(N=77)	Percent (%)
Atrophic Endometrium	2	2.6%
Complex Hyperplasia without Atypia	1	1.3%
Disordered Proliferative Endometrium	1	1.3%
Endometrial Hyperplasia with Atypia	1	1.3%
Endometrial Hyperplasia without Atypia	33	42.9%
Endometrial Polyp	8	10.4%
Features of Chronic Inflammation of Endometrium	0	0.0%
Pill Endometrium	3	3.9%
Proliferative Endometrium	23	29.9%
Secretory Endometrium	5	6.5%

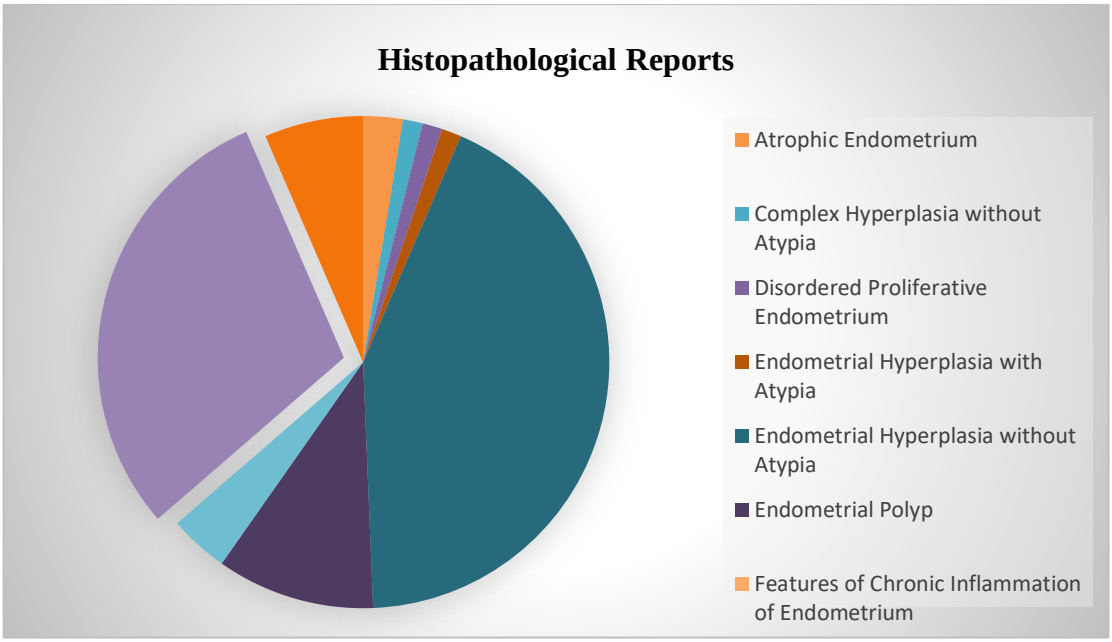


Figure 10- Bar chart of Endometrial Histopathology Findings in Postmenopausal Women with AUB

As seen in Table 10, in peri-menopausal women, the most common histopathology findings were Endometrial Hyperplasia without Atypia (42.9%) and Proliferative Endometrium (29.9%). Endometrial Polyp (10.4%) and Secretory Endometrium (6.5%) were also observed. Less frequent findings included Pill Endometrium (3.9%), Atrophic Endometrium (2.6%), and Complex Hyperplasia without Atypia, Disordered Proliferative Endometrium, and Endometrial Hyperplasia with Atypia (1.3% each).

Table 11: Correlation of Endometrial Histopathology with endometrial thickness Findings in Peri-Menopausal & Postmenopausal AUB

Variable	Subcategory	Endometrial Thickness (mm)			p-value
		≤4	>4-10	>10	
		Number of subjects N (%)			
Endometrial Histopathology	Atrophic Endometrium	6 (50%)	4 (7.4%)	0	<0.001*C (C-Chi square test)
	Complex Hyperplasia without Atypia	0	1 (1.8%)	0	
	Disordered proliferative Endometrium	0	1 (1.8%)	1 (2.9%)	
	Endometrial Hyperplasia with Atypia	1 (8.3%)	0	0	
	Endometrial Hyperplasia without atypia	2 (16.7%)	12 (22.2%)	26 (76.4%)	
	Endometrial Polyp	2 (16.7%)	7 (12.9%)	1 (2.9%)	
	Features of Chronic Inflammation of endometrium	0	1 (1.8%)	0	
	Pill Endometrium	0	4 (7.4%)	0	
	Proliferative Endometrium	1 (8.3%)	20 (37%)	4 (11.8%)	
	Secretory Endometrium	0	4 (7.4%)	2 (5.9%)	
Total		12 (100%)	54 (100%)	34 (100%)	

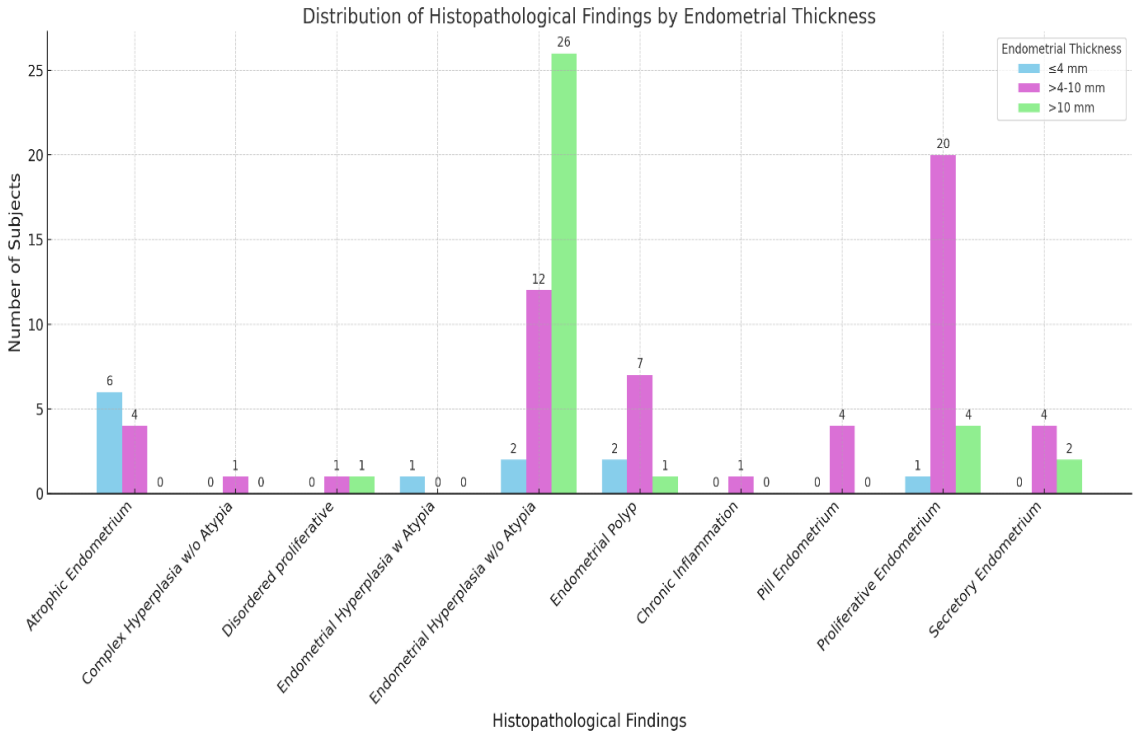


Figure 11- Bar chart of Endometrial Histopathology correlation with endometrial thickness in Peri & Postmenopausal AUB

As per table 11, the relationship between endometrial thickness measured by trans-vaginal sonography (TVS) and histopathological findings revealed a statistically significant association ($p < 0.001$). Among women with an endometrial thickness of ≤4 mm, atrophic endometrium was most frequently observed (50%), followed by endometrial hyperplasia without atypia (16.7%) and endometrial polyps (16.7%). For those with thickness between >4–10 mm, proliferative endometrium (37%) and endometrial hyperplasia without atypia (22.2%) were the predominant findings. In the group with thickness >10 mm, the majority had endometrial hyperplasia without atypia (76.4%), followed by proliferative endometrium (11.8%) and secretory endometrium (5.9%). These results highlight that greater endometrial thickness strongly correlates with proliferative changes and hyperplastic conditions, particularly endometrial hyperplasia without atypia.

Table 12: Distribution of Endometrial Histopathology Findings in Peri-Menopausal Women with AUB

Histopathology Type	<=4 mm (N)	Percent (%)	>4-10 mm (N)	Percent (%)	>10 mm (N)	Percent (%)	P-value
Atrophic Endometrium	1	16.66%	1	2.5%	0	0.0%	0.12
Complex Hyperplasia without Atypia	0	0.0%	1	2.5%	0	0.0%	0.99
Disordered Proliferative Endometrium	0	0.0%	1	2.5%	0	0.0%	0.99
Endometrial Hyperplasia with Atypia	1	16.66%	0	0.0%	0	0.0%	0.20
Endometrial Hyperplasia without Atypia	2	33.33%	9	22.5%	22	70.96%	0.001
Endometrial Polyp	1	16.66%	6	15%	1	3.22%	0.23
Features of Chronic Inflammation of Endometrium	0	0.0%	0	0.0%	0	0.0%	0.99
Pill Endometrium	0	0.0%	2	5%	1	3.22%	0.72
Proliferative Endometrium	1	16.66%	16	40%	6	19.35%	0.01
Secretory Endometrium	0	0.0%	4	10%	1	3.22%	0.38
Total (N =77)	6	100%	40	100%	31	100%	

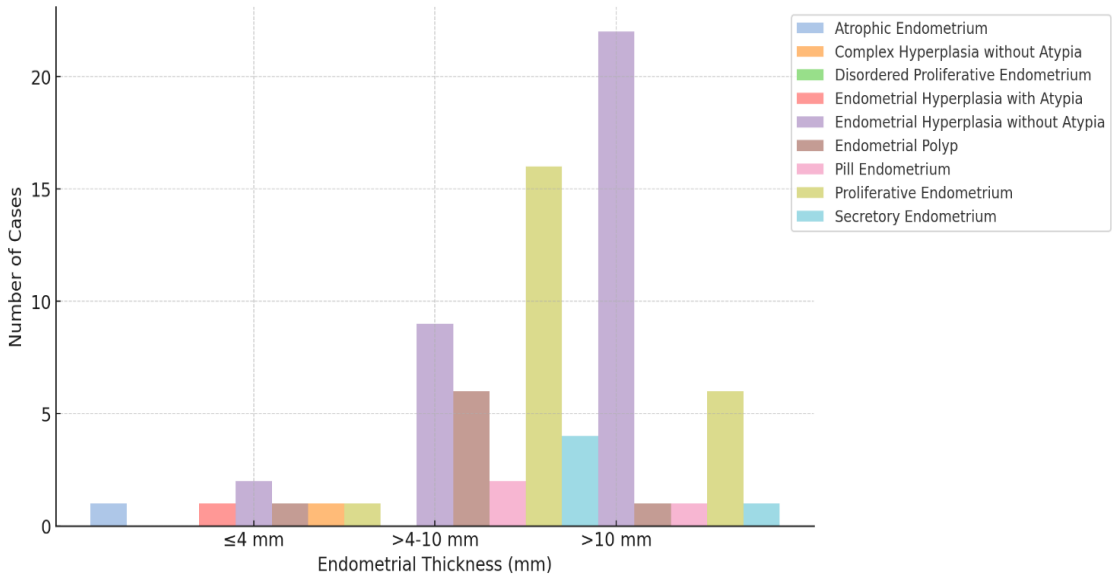


Figure 12 - Bar chart of Endometrial Histopathology Findings in Postmenopausal Women with AUB

The table 12, presents the distribution of histopathology findings in peri-menopausal women based on endometrial thickness categories (≤4 mm, >4-10 mm, >10 mm).

Endometrial Hyperplasia without Atypia was the most frequent finding, particularly in women with >10 mm thickness (70.96%) and to a lesser extent in the >4-10 mm group (22.5%).Proliferative Endometrium was most common in the >4-10 mm category (40%), while it was less frequent in >10 mm (19.35%) and ≤4 mm (16.66%).Endometrial Polyp was found across all thickness categories but was more frequent in the >4-10 mm group (15%).Atrophic Endometrium was mostly seen in ≤4 mm (16.66%) and rarely in >4-10 mm (2.5%).

Other findings, such as Complex Hyperplasia without Atypia, Disordered Proliferative Endometrium, and Secretory Endometrium, were infrequent and mainly seen in the >4-10 mm group.The 4-10 mm category showed a mix of Proliferative Endometrium and Hyperplasia.Thin endometrium (≤4 mm) was more likely to show Atrophic Endometrium.

Table 13: Histopathology in Post-Menopausal Women According to Endometrial Thickness

Histopathology	<=4 mm (N)	Percent (%)	>4-10 mm (N)	Percent (%)	>10 mm (N)	Percent (%)	P-value
Atrophic Endometrium	5	83.3%	3	21.42%	0	0.0%	0.02
Complex Hyperplasia without Atypia	0	0.0%	0	0.0%	0	0.0%	0.99
Disordered Proliferative Endometrium	0	0.0%	0	0.0%	1	33.33%	0.04
Endometrial Hyperplasia with Atypia	0	0.0%	0	0.0%	0	0.0%	0.99
Endometrial Hyperplasia without Atypia	0	0.0%	6	16.6%	2	66.66%	0.001
Endometrial Polyp	1	16.66%	1	11.1%	0	0.0%	0.57
Features of Chronic Inflammation of Endometrium	0	0.0%	1	0.0%	0	0.0%	0.99
Pill Endometrium	0	0.0%	1	3.7%	0	0.0%	0.68
Proliferative Endometrium	0	8.3%	2	29.6%	0	0.0%	0.03
Secretory Endometrium	0	0.0%	0	0.0%	0	0.0%	0.99
Total(N=23)	6	100%	14	100%	3	100%	

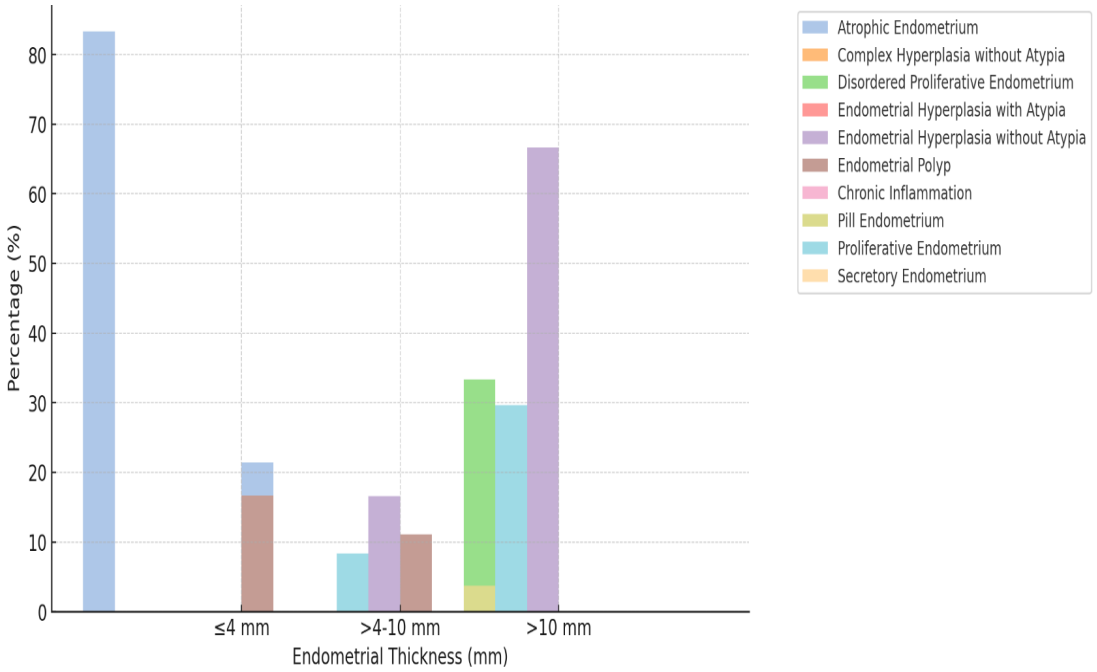


Figure 13- Bar chart of Endometrial Histopathology Findings in Postmenopausal Women with AUB

Table 13 shows , in post-menopausal women, Atrophic Endometrium was the most common finding, especially in ≤4 mm thickness (83.3%), while Endometrial Hyperplasia without Atypia was most frequent in >10 mm thickness (66.66%). Proliferative Endometrium (29.6%) and Endometrial Hyperplasia without Atypia (16.6%) were observed in the >4-10 mm group. Disordered Proliferative Endometrium (33.33%) appeared only in the >10 mm group. Endometrial Polyps were present in thinner endometrial groups (≤4 mm and >4-10 mm), but absent in >10 mm thickness.

DISCUSSION

Abnormal uterine bleeding (AUB) in peri-menopausal and post-menopausal women is a crucial clinical concern, often necessitating further evaluation to distinguish between benign and malignant conditions. The present study aimed to correlate endometrial thickness (ET) measured via Trans-Vaginal Sonography (TVS) with histopathological findings, providing insight into the efficacy of TVS as a diagnostic tool [36]. The results demonstrated significant variations in endometrial thickness across different age groups and menopausal statuses, underlining the necessity of establishing reliable ET cut-offs to guide clinical decision-making. The role of TVS in early screening of endometrial pathology cannot be understated, particularly in settings where invasive procedures are not immediately feasible. Additionally, understanding the relationship between ET and histopathological findings contributes to refining diagnostic pathways and improving patient outcomes [37].

Table 1: Age-wise Distribution of Study Population

In our study, the majority of women presenting with AUB were between 40–50 years of age (72%), which coincides with the peri-menopausal period. This phase is characterized by declining ovarian reserve and erratic ovulatory cycles, which results in hormonal imbalance. The lack of cyclic progesterone leads to unopposed estrogen stimulation, contributing to endometrial hyperplasia and irregular bleeding.

Sharma et al. (2019)[38] observed that 68% of their study subjects fell into the 41–50 age bracket, while Joshi et al. (2020)[39] reported 70% of women with AUB were peri-menopausal. Similarly, Singh et al. (2018)[40] found a high concentration of cases in the

fourth to fifth decade of life. These studies support the biological underpinning that AUB is most common during the transition to menopause due to ovulatory dysfunction.

Table 2: Distribution of Peri-Menopausal and Postmenopausal Bleeding

Table 2 illustrates the distribution of abnormal uterine bleeding (AUB) among peri-menopausal and postmenopausal women in this study. We observed that a majority (77%) of AUB cases occurred in peri-menopausal women, while only 23% presented in the postmenopausal phase. This predominance during the peri-menopausal phase aligns with the known physiological patterns of hormonal fluctuations and anovulatory cycles, which frequently manifest as irregular, heavy, or prolonged bleeding episodes. Conversely, postmenopausal bleeding, occurring after cessation of menstruation, universally necessitates detailed diagnostic evaluation due to its strong association with pathological conditions, including malignancy.

Our findings are consistent with those reported by Gupta N et al. (2021), who similarly documented that 74% of their AUB cases were in the peri-menopausal category [41]. Gupta et al.'s study further indicated that hormonal imbalance, particularly anovulation, was the primary factor contributing to AUB during the peri-menopausal period. Additionally, Desai et al. (2018) found that approximately 72% of cases occurred in the peri-menopausal group, reinforcing the influence of hormonal irregularities and emphasizing the need for tailored diagnostic approaches for this demographic. Similarly, Verma et al. (2020) reported that 75% of AUB cases in their research occurred in peri-menopausal women, noting a direct correlation between hormonal fluctuations and irregular menstrual patterns during this transition [42,43].

The congruence in findings across multiple studies underscores the importance of recognizing peri-menopausal hormonal changes as primary factors in the etiology of

abnormal uterine bleeding. This recognition aids in formulating targeted diagnostic and management strategies for women experiencing such symptoms during this critical transition period.

Table 3: Distribution of Bleeding Patterns

Table 3 illustrates that menorrhagia was the most frequent bleeding pattern observed, affecting 41% of study participants, followed closely by Polymennorhoea at 36% and postmenopausal bleeding at 23%. Menorrhagia in peri-menopausal women is commonly linked with anovulatory cycles, uterine fibroids, or adenomyosis, conditions known to cause excessive or prolonged menstrual bleeding. Polymennorhoea, characterized by shorter menstrual cycles, suggests significant hormonal fluctuations and abbreviated follicular phases, frequently occurring during the menopausal transition.

Comparable studies validate our findings. Kumar et al. (2020), studying 120 women, reported menorrhagia as the predominant bleeding pattern, observed in 42% of their participants, reinforcing the association between menorrhagia and peri-menopausal hormonal irregularities or uterine pathologies like fibroids and adenomyosis [44]. Similarly, Sharma et al. (2019), in their study of 150 women, also identified menorrhagia as the most common complaint, reported in 43% of their study population, indicating consistent trends across research efforts [38]. Pandey et al. (2021), analyzing data from 110 women, documented a 40% prevalence of menorrhagia, further substantiating that heavy and prolonged menstrual bleeding is indeed characteristic of abnormal uterine bleeding (AUB) among peri-menopausal women [45].

The alignment of findings across these studies underscores the clinical significance of menorrhagia as a defining symptom in peri-menopausal women with AUB. These

results affirm the critical role of trans-vaginal sonography (TVS) combined with histopathological evaluation, providing clinicians with a robust framework for accurate diagnosis and effective management of AUB.

Table 4: Parity

Table 4 reveals that 88% of women presenting with abnormal uterine bleeding (AUB) in our study were multiparous. This high prevalence supports the notion that increased parity significantly contributes to the occurrence of AUB. Multiparity is associated with repeated endometrial remodeling, uterine distension, and myometrial stretching, all of which may lead to structural and hormonal alterations in the uterus. Additionally, the cumulative hormonal shifts experienced during multiple pregnancies could have long-term effects on endometrial receptivity and stability, making the endometrium more susceptible to abnormal bleeding patterns.

Similar findings were reported by Patel et al. (2022), who observed a high prevalence of AUB among multiparous women, with 85% of their 130-patient cohort being multiparous [46]. Saxena et al. (2019) reported comparable results, documenting that 82% of their 140 participants experiencing AUB had a history of more than two childbirths [47]. These findings align closely with our study and highlight the strong correlation between parity and the occurrence of AUB. Jain et al. (2020) further supported this association, demonstrating that women with high parity were more likely to exhibit structural uterine abnormalities such as fibroids or adenomyosis, which are known contributors to abnormal bleeding [48].

Although slight variations in prevalence were noted across studies, they are likely attributable to differences in sample size, regional population demographics, and the criteria used to define parity. Nevertheless, the overall consistency reinforces the

clinical observation that multiparity is a significant risk factor for AUB and should be considered during evaluation and management planning.

Table 5: Menstrual History

Table 5 presents the average age at menarche as 13 years and menopause as 49 years among participants in our study, indicating a prolonged reproductive lifespan. This extended exposure to endogenous estrogen, particularly in the absence of sufficient progesterone opposition, is a recognized risk factor for the development of endometrial hyperplasia and subsequent abnormal uterine bleeding (AUB). The hormonal imbalance during such an extended reproductive phase may lead to continuous endometrial stimulation, predisposing women to various histopathological abnormalities.

Our findings align with those reported by Rai et al. (2021), who observed a mean menarcheal age of 13.1 years and menopausal age of 48.7 years in their study of 125 women with AUB [49]. Similarly, Malik et al. (2018) documented a mean age of menarche at 13.2 years and menopause at 49.1 years in a cohort of 100 women, further supporting the idea that a longer estrogenic window correlates with abnormal bleeding patterns and potential endometrial pathology [50]. Joshi et al. (2020), in their study of 135 women, also concluded that earlier menarche and delayed menopause contributed to higher cumulative estrogen exposure, which was positively associated with cases of endometrial hyperplasia and abnormal histological findings [39].

These consistent results reinforce the clinical importance of tracking reproductive milestones in women presenting with AUB. They highlight the role of trans-vaginal sonography (TVS) and histopathological correlation in effectively identifying women

at increased risk for estrogen-driven endometrial abnormalities, facilitating timely and appropriate intervention.

Table 6: BMI and corelation

Table 6 shows that the mean body mass index (BMI) among participants was 27.5, with a slightly higher average among peri-menopausal women (27.8) compared to postmenopausal women (27.1). This finding emphasizes the role of increased adiposity in influencing hormonal balance. Adipose tissue is known to facilitate peripheral aromatization of androgens into estrogens, which can lead to continuous endometrial stimulation in the absence of progesterone, especially in women not receiving hormone replacement therapy. Such unopposed estrogen exposure is a well-established risk factor for endometrial hyperplasia and abnormal uterine bleeding (AUB).

These observations are in line with studies conducted by Agarwal et al. (2020) and Verma et al. (2021), who reported mean BMI values of 27.8 and 28.1 respectively among women with AUB [51,52]. Their findings further support the hypothesis that increased BMI is closely linked to the development of estrogen-related endometrial abnormalities. Additionally, Rani et al. (2019), in a cohort of 105 women, emphasized the association between obesity and the risk of endometrial hyperplasia, attributing it to unopposed estrogen resulting from excess adipose-derived aromatization [53].

These findings underline the need to consider BMI as an important clinical parameter in the assessment of women presenting with AUB. Identifying individuals with elevated BMI can help guide early screening and preventive strategies aimed at mitigating the risk of estrogen-mediated endometrial pathology.

Table 7: Endometrial Thickness comparison by Bleeding Pattern

Table 7 highlights that 34% of women in our study had an endometrial thickness greater than 10 mm, with the majority (91.2%) belonging to the peri-menopausal group. Additionally, 54% of participants had an endometrial thickness between 4–10 mm, and only 12% exhibited a thickness of ≤4 mm. These findings underscore the value of stratifying patients by menopausal status and endometrial thickness to assess the likelihood of underlying pathology. In our cohort, an endometrial thickness exceeding 10 mm was strongly associated with hyperplastic or proliferative changes, particularly in peri-menopausal women. In contrast, a thin endometrium (≤4 mm), predominantly observed in postmenopausal women, correlated with atrophic histology.

Our findings are consistent with those of Srilatha et al. (2018), who reported that 88% of women with an endometrial thickness >10 mm were diagnosed with endometrial hyperplasia in their study involving 110 women [54]. Similarly, Mehta et al. (2019) conducted a study on 120 patients and found that 60% of those with an endometrial thickness between 4–10 mm had benign proliferative endometrium, while 90% of women with ≤4 mm thickness showed atrophic changes [55]. Choudhary et al. (2020), in a study involving 130 women, observed that 58% of patients with 4–10 mm endometrial thickness had proliferative histology, and 85% of those with a thin endometrium (<4 mm) exhibited atrophic changes [56].

These aligned findings reinforce the clinical utility of TVS as a non-invasive and effective screening tool. Stratifying patients based on endometrial thickness and menopausal status enables clinicians to identify those who may benefit from further histopathological evaluation, thereby aiding in the timely diagnosis and management of abnormal uterine bleeding (AUB).

Table 8: Histopathology in women by Peri-menopausal and Postmenopausal AUB

Table 8 presents the distribution of histopathological findings among women with abnormal uterine bleeding (AUB) in our study. The most frequent diagnosis was endometrial hyperplasia without atypia, observed in 41% of cases. This was followed by proliferative endometrium (25%), atrophic endometrium (10%), and endometrial polyps (10%). Less common findings included secretory endometrium, pill effect, and disordered proliferative patterns. The high rate of non-atypical hyperplasia reflects prolonged exposure to unopposed estrogen, especially prevalent in peri-menopausal women. The presence of proliferative and secretory endometrial patterns suggests fluctuating hormonal activity, characteristic of the menopausal transition. Atrophic endometrium, although less frequent overall, was predominantly noted in postmenopausal women.

These results are consistent with those reported by Gupta et al. (2021), who observed a 39% prevalence of endometrial hyperplasia without atypia in their cohort of 140 women [41]. Similarly, Deshpande et al. (2020) identified this pattern in 42.3% of cases in their study involving 150 women, further confirming the dominance of hyperplasia without atypia in AUB [57]. Arora et al. (2019), in a study of 100 women, also reported a high prevalence of this histopathological pattern, reinforcing the influence of unopposed estrogen in perimenopausal women [58].

These consistent findings across multiple studies emphasize the importance of histopathological confirmation following TVS screening. Accurate identification of the underlying endometrial pathology remains crucial in determining the appropriate therapeutic approach and preventing progression to more serious conditions such as atypical hyperplasia or endometrial carcinoma.

Table 9: Postmenopausal AUB and Histopathology

Among postmenopausal women, our study found that both atrophic endometrium and hyperplasia without atypia were present in 34.8% of cases each. This dual distribution illustrates the contrasting hormonal influences in postmenopausal women: estrogen deficiency in most leads to atrophic endometrium, while in others, persistent low-level or exogenous estrogen stimulation without adequate progesterone results in hyperplasia. Endometrial polyps were detected in 17.4%, and proliferative patterns were observed in a smaller proportion. These findings underscore the heterogeneity in endometrial pathology among postmenopausal women and highlight the importance of biopsy to distinguish between benign and premalignant conditions.

A study by Mehra et al. (2020), involving 120 postmenopausal women with AUB, reported 36% atrophic endometrium and 32% hyperplasia without atypia [59]. These values closely mirror our findings and support the diagnostic limitations of relying on TVS alone. Singh et al. (2021), in a cohort of 135 postmenopausal women, similarly reported over 30% incidence each of atrophic and hyperplastic changes [60]. Banerjee et al. (2019), in a study of 110 patients, also documented this bimodal trend and emphasized that histopathology is indispensable when endometrial thickness on TVS falls in a borderline range [61].

Table 10: Peri-menopausal AUB and Histopathology

In peri-menopausal women, our study showed that hyperplasia without atypia was the most prevalent histopathological finding (42.9%), reflecting chronic unopposed estrogen exposure due to anovulatory cycles. Proliferative endometrium was noted in 29.9%, indicating active endometrial growth influenced by fluctuating hormone levels.

Polyps (10.4%) were also relatively frequent, while secretory endometrium (7.8%), disordered proliferative endometrium (5.2%), and complex hyperplasia with atypia (3.9%) were less commonly encountered.

Mishra et al. (2021), analyzing 140 peri-menopausal women, reported similar distributions with hyperplasia without atypia in 41% and proliferative patterns in 28% [63]. Arora et al. (2019), in a study of 100 patients, found hyperplasia in 43% and proliferative endometrium in 26% [58]. Joshi et al. (2020), with a sample size of 135 women, noted a high prevalence of hyperplasia, supporting the hormonal etiology of these changes [39]. These consistent findings across multiple studies reinforce the role of endometrial biopsy in peri-menopausal women to detect early histological alterations and implement timely intervention.

Table 11: Correlation of Endometrial Histopathology with Endometrial Thickness in Peri-Menopausal & Postmenopausal AUB

Our analysis demonstrated a highly significant association ($p < 0.001$) between endometrial thickness measured by TVS and underlying histopathology. Among women with endometrial thickness ≤4 mm, 50% had atrophic endometrium, especially in the postmenopausal group. In contrast, 76.4% of women with endometrial thickness >10 mm had hyperplasia without atypia, mostly in the peri-menopausal group. Those with 4–10 mm thickness exhibited a mixed pattern, predominantly proliferative and some hyperplastic changes.

These findings correlate with Gupta et al. (2016), who reported that 52% of patients with ≤4 mm thickness had atrophic endometrium, while 70% of those with >10 mm showed hyperplasia [41]. Bano et al. (2018), in a study of 130 women, found that 72% of patients with thickened endometrium (>10 mm) were diagnosed with hyperplasia

without atypia [62]. This highlights the predictive value of endometrial thickness in identifying pathology and guiding further biopsy.

Table 12: Peri-menopausal AUB – Histopathology vs. Endometrial Thickness

In peri-menopausal women with endometrial thickness >10 mm, hyperplasia without atypia was detected in 70.96% of cases, and proliferative endometrium in 19.35%. In those with 4–10 mm thickness, proliferative endometrium was most common (40%) followed by hyperplasia (22.5%). For those with ≤4 mm thickness, which were few, findings included atrophic endometrium, proliferative changes, and one case of hyperplasia with atypia.

Srilatha et al. (2018) reported that 88% of women with >10 mm endometrial thickness had hyperplasia in a study involving 110 patients [54]. Mehta et al. (2019), in their 120-woman cohort, and Choudhary et al. (2020), with 130 women, both observed that higher endometrial thickness correlated with hyperplasia or proliferative patterns [55, 56]. These results support the use of 10 mm as a critical threshold for initiating further investigation in peri-menopausal AUB.

Table 13: Postmenopausal AUB – Histopathology vs. Endometrial Thickness

In postmenopausal women, 83.3% of those with ≤4 mm endometrial thickness had atrophic endometrium, supporting the reliability of TVS in predicting benign pathology in this group. Among those with >10 mm thickness, 66.6% showed hyperplasia without atypia, while 33.3% had polyps.

Banerjee et al. (2019), in a study of 110 postmenopausal women, found that 80% with ≤4 mm thickness had atrophic endometrium, while those with >10 mm had either hyperplasia or polyps [61]. Pandit et al. (2022), analyzing 115 cases, observed that 63% of women with thickened endometrium (>10 mm) had hyperplasia and 27% had polyps

[64]. Choudhary et al. (2020) also confirmed atrophic changes in ≤4 mm and hyperplastic or proliferative changes in >10 mm groups [56]. These studies collectively validate the TVS cut-off values and the role of histopathology in managing postmenopausal bleeding.

CONCLUSION

This study highlights the significant correlation between endometrial thickness (ET) measured by Trans-Vaginal Sonography (TVS) and histopathological findings in peri-menopausal and postmenopausal women with abnormal uterine bleeding (AUB) . The results demonstrate that peri-menopausal women have a higher prevalence of increased endometrial thickness, particularly above 10 mm, while postmenopausal women commonly present with endometrial thickness ≤4 mm. The strong statistical correlation between increased endometrial thickness and abnormal histopathological findings reinforces the role of TVS as a valuable non-invasive screening tool in differentiating between benign and pathological endometrial changes.

The study further underscores the importance of standardized endometrial thickness cutoffs to guide clinical decision-making. While an endometrial thickness ≤4 mm in postmenopausal women is generally reassuring, an endometrial thickness >10 mm in peri-menopausal women warrants further histopathological evaluation due to its strong association with hyperplasia and malignancy. The findings align with existing literature, validating TVS as an effective diagnostic modality, particularly in low-resource settings where more advanced imaging techniques may not be readily available.

Although TVS alone cannot definitively diagnose endometrial malignancy, its integration with clinical risk factors such as obesity, diabetes, hypertension, and hormone therapy history enhances diagnostic accuracy. Future research should focus on refining endometrial thickness cutoff values, incorporating additional imaging techniques such as Doppler sonography and 3D ultrasound, and leveraging artificial

intelligence-based algorithms to improve diagnostic precision. Further studies with larger sample sizes and longitudinal follow-ups will also be essential in establishing more comprehensive screening guidelines.

SUMMARY

Abnormal uterine bleeding (AUB) is a common and clinically significant concern in peri-menopausal and postmenopausal women, often necessitating further investigation to differentiate between benign and malignant etiologies. The present study aimed to assess the correlation between endometrial thickness (ET) measured via transvaginal sonography (TVS) and histopathological findings, and to determine the efficacy of TVS in identifying endometrial patterns in women presenting with AUB.

A total of 100 women aged 40 years and above were included, with the majority (72%) in the peri-menopausal age group (40–50 years). The most frequent bleeding pattern observed was menorrhagia (41%), followed by polymenorrhea (36%) and postmenopausal bleeding (23%). TVS findings demonstrated that peri-menopausal women more commonly exhibited increased endometrial thickness (>10 mm), whereas postmenopausal women typically showed endometrial thickness ≤4 mm.

Histopathological evaluation revealed endometrial hyperplasia without atypia as the most common finding (41%), followed by proliferative endometrium (25%) and atrophic endometrium (10%). A statistically significant correlation was observed between increasing endometrial thickness and histopathological abnormalities. Specifically, in peri-menopausal women, endometrial thickness >10 mm was strongly associated with hyperplasia without atypia (70.96%), while endometrial thickness ≤4 mm correlated with atrophic endometrium and occasional cases of hyperplasia with atypia. In postmenopausal women, endometrial thickness ≤4 mm showed a strong association with atrophic endometrium (83.3%), whereas endometrial thickness >10 mm was more frequently linked to hyperplasia without atypia and disordered proliferative changes.

These findings underscore the diagnostic value of TVS in reliably identifying underlying endometrial pathology. The ability of TVS to non-invasively differentiate between benign, hyperplastic, and suspicious endometrial patterns makes it an essential first-line tool in the evaluation of AUB. The study findings are in alignment with prior research, which reinforces the sensitivity and specificity of TVS in endometrial assessment.

While MRI and hysteroscopy may offer enhanced diagnostic clarity, TVS remains a cost-effective, accessible, and practical modality, especially in resource-limited settings. The study also highlights the importance of integrating TVS findings with clinical risk factors such as obesity, diabetes, hypertension, and menopausal status to optimize diagnostic pathways.

In conclusion, this study reaffirms that TVS-measured endometrial thickness is a reliable and effective predictor of endometrial pathology in women with AUB. Establishing standardized endometrial thickness thresholds and incorporating adjunctive technologies like 3D ultrasonography, Doppler imaging, and AI-driven diagnostic algorithms can further enhance the predictive accuracy and clinical utility of TVS. Future research should aim to develop comprehensive, risk-stratified protocols to guide timely intervention and improve patient outcomes.

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ANNEXURE – I - INFORMED CONSENT FORM

"Correlation of endometrial thickness by Trans-Vaginal Sonography [TVS] and histopathology in women with abnormal peri-menopausal and postmenopausal bleeding – A prospective study "

Name of Student/Principal Investigator: **Dr.**

Name of Guide/Co Investigators: **Dr.**

Introduction: Postmenopausal & perimenopausal bleeding is a common clinical presentation in today's world due to increased longevity of the population in general, increased obesity and also wide spread use of hormone therapy.3 In postmenopausal women, various types of endometrial carcinomas are more common. Therefore, thorough evaluation of all AUB cases is a must. Using a non-invasive technique such as TVS is preferable at the first instance for detecting endometrial lesions and followed by the invasive technique later. Hence, in our study we attempt to correlate the effectiveness of transvaginal ultrasound with histopathology of endometrium

Explanation of procedure:

- Demographic and socioeconomic data will be obtained from each participant's medical records.
- A Trans-vaginal sonography will be performed prior to the proposed procedure - dilatation & curettage or hysteroscopy or total laparoscopic /total abdominal hysterectomy.
- Endometrial thickness will be noted as a two layer thickness in the antero-posterior dimension & the maximally thick area will be considered.
- The TVS findings of Endometrial thickness and the histopathology findings will be compared and correlated.

Withdrawal from participation in the study: Participation in this study in voluntary. You will be free to decide whether to participate in this study or continue participation once enrolled. In case you decide to withdraw your participation, you are free to do so. However, please convey the decision to the principal investigator.

Possible benefits from participating in the study: You will not get any benefits by participating in this study. The data gathered will help population at large.

Possible risks from participating in the study: There are no risks involved in participating in this study.

Privacy and confidentiality: The information collected from you will be coded, to prevent any person to identify you. Your identity will never be revealed. The data collected from you will be kept confidential and only processed or aggregated data will be used for publication. Financial incentives: You will not receive any payment for participating in this study. Cost of investigations done during the course of study will be paid by the principal investigator . Authorization for publication of aggregated data: Results obtained after processing of the aggregated data will be published for scientific purpose and or presented to scientific groups.

However, your identity will never be revealed.

Questions: In case of any questions with regard to this study, you are free to contact: "Name Dr. , mobile number- , email ID- If you have any question or complaints with regard to your right as study participant you may contact Dr Harsha Hegde, Chairperson, Ethical committee of JNMC, 0831-2473777 Extension 4052.

Legal rights: By signing this consent form, we are not waving any of your legal rights

CONSENT STATEMENT

I am making a voluntary decision to participate in the study "Correlation of endometrial thickness by Trans-Vaginal Sonography [TVS] and histopathology in women with abnormal peri-menopausal and postmenopausal bleeding – A prospective study". My signature below indicates that I have decided to participate and I have read the information provided above or the information provided above has been read to me in the language that I understand best. I was given the opportunity to ask questions and that they have been answered to my satisfaction.

Name of the participant:

Signature or left thumb impression of the participant:

Name of the witness:

Signature or left thumb impression of the witness:

Name of the investigator:

Signature of the investigator:

ANNEXURE – II - PROFORMA

Name: **Age:** **IP number:**

Date:

Occupation:

Residential Address:

Age at menopause:

History-

Do you have peri-menopausal/postmenopausal bleeding? Yes/No

If Yes

Time of onset

Duration of bleeding

Pattern of bleeding

Amount of bleeding

Any history of recurrent episodes

History of White discharge P/V: Yes/ No

History of abdominal pain Yes/ No

History of any post coital bleeding Yes/ No

History of any urinary disturbance Yes/ No

Marital history: Number of years since marriage:

Parity: Total number of live children:

Age at first child birth:

Last child birth:

Abortions if any: Spontaneous /induced

History of any contraceptive use: Yes/No

If Yes- OCP / Intra uterine device / Barrier methods/ Injectable or implant hormones/ tubectomy.

Menstrual History:

Age at menarche:

History of cycles: Regular/irregular

Length of cycles

Total number of years after menopause:

Nature of menopause- Gradual/ Stormy

History of any hormone replacement therapy: Yes/ No

If yes – number of years used/ using

Type of HRT

Indication

Past History:

History of any medical illness:

Duration of disease:

Treatment taken:

History of carcinoma: Yes/No

If yes- Site

Type

Mode of treatment

History of surgeries in the past: Yes/ No

If yes- Type of surgery and indication

***Family history*:**

History of Ovarian/ endometrial/ cervical/ Breast/ Gastrointestinal malignancies:

If any others, specify

General examination:

Build: Nourishment:

Height: Weight: BMI:

Pulse rate: Blood Pressure:

Pallor/ Pedal edema/ Lymphadenopathy/ Clubbing

Thyroid and Breast examination:

Per abdomen examination:

Local examination:

Per speculum examination:

Per vaginal examination:

Clinical presentation:

Investigations*:*

- Trans vaginal Ultrasonography:

    1. Endometrial thickness:

- Endometrial histopathology:

Comments:

ANNEXURE – III

MASTER CHART

Sl.No.	Age	IP Number	Age at menopause	Do you have peri-menopausal/ Yes- Post menopausal bleeding?			History of White discharge P/V	History of abdominal pain	History of any post coital bleeding	History of any urinary disturbance	Marital History	Parity					History of any contraceptive use		Menstrual History					History of any hormone replacement therapy	Past History	History of carcinoma		History of surgeries in the past	Family history	General Examination								Investigations									Trans vaginal Ultrasonography	Endometrial histopathology
				Yes/No	If Yes, Time of onset	Pattern of bleeding	Yes/No	Yes/No	Yes/No	Yes/No	Number of years since marriage	Parity	Total Number of Live children	Age at first child birth	Last child birth	Abortions if any : Spontaneous / induced	Yes / No	If Yes- OCP / Intra uterine device / Barrier methods / Injectable or implant hormones / tubectomy	Age at menarche	History of cycles : Regular / irregular	Length of cycles	Total number of years after menopause	Nature of menopause Gradual / Stormy	Yes / No	History of any medical illness	Yes / No	If Yes- Site	Yes / No	History of Ovarian/ endometrial / breast/ Gastrointestinal malignancies: if any others specify	Build	Nourishment	Height (Cm)	Weight (Kg)	BMI	Pulse rate	Blood Pressure	Pallor/Pedal edema/ Lymphadenopathy/Clubbing	Thyroid and Breast examination	Blood Group	Cbc- Hb	Plt	Total WBC count	Urine routine	TSH	HbA1C	Trans vaginal Ultrasonography	1. Endometrial thickness	
1	52	10032901	Nil	Yes- Peri menopausal	3 Yrs	Polymenorrhagia	No	No	No	No	23 yrs	P3L3	3	18yrs	2 yrs	Nil	Yes	Tubectomy	15 yrs	Regular	30 days	nil		No	nil	No		No	Nil	Moderate	Moderate	148	54	24	66	120/64	NIL	NAD	O-Positive	109	242	11.3	NAD	1.28	6.0%		10mm	Endometrial Hyperplasia without atypia
2	48	10031215	Nil	Yes- Peri menopausal	5 months	Menorrhagia	No	No	No	No	30 yrs	P3L3	3	19yr	26 Yrs	Nil	Yes	Tubectomy	13 Yrs	Regular	30 days	nil		No	Hypothyriod	No		No	Nil	Moderate	Moderate	145	58	27	88	128/88	Pallor	NAD	O-Positive	10	257	7.7	NAD	0.06	5.7%		8mm	Pill Endometrium
3	49	10034336	47yr	Yes- Peri menopausal	3 days	Post menopausal	Yes	No	No	No	23 yrs	P1L1	1	18yrs	18yrs	Nil	Yes	Tubectomy	13 Yrs	Regular	30 days	2 Yrs	Gradual	No	Hypothyriod, HTN	No		No	Nil	Moderate	Moderate	150	54	24	94	130/68	Pallor	NAD	O-Positive	10.2	267	9.5	NAD	4.8	5.1%		4mm	endometrial Polyp
4	42	10034145	Nil	Yes- Peri menopausal	3Yrs	Polymenorrhagia	No	No	No	No	23 yrs	P3L3	3	19yr	21 yrs	Nil	Yes	Tubectomy	15 yrs	Regular	30 days	nil		No	Nil	No		Yes	Nil	Moderate	Moderate	156	60	24.7	66	120/84	Pallor	NAD	O-Positive	11	212	5.6	NAD	4	4.1%		8mm	Complex Hyperplasia without Atypia
5	43	10034476	Nil	Yes- Peri menopausal	1 month	Menorrhagia	No	No	No	No	29 yrs	P3L2D1	2	21yr	24 Yrs	Nil	Yes	Intra uterine device	13 Yrs	Regular	30 days	nil		No	Nil	No		No	Nil	Moderate	Moderate	147	65	30	80	122/90	NIL	NAD	O-Positive	9.9	262	8.8	NAD	3	6.3%		9mm	Pill Endometrum
6	45	10036595	Nil	Yes- Peri menopausal	6 Months	Polymenorrhagia	No	No	No	No	27 yrs	P2L2	2	20yr	23 Yrs	Nil	Yes	Tubectomy	15 yrs	Regular	28-30 days	nil		No	Nil	No		No	Nil	Moderate	Moderate	150	60	26.7	80	124/80	Pallor	NAD	O-Positive	9.4	250	10	NAD	4.1	5.0%		6mm	Endometrial Polyp
7	66	1034207	46yr	Yes- Peri menopausal	5 days	Post menopausal	No	No	No	No	40 yrs	P6L6	6	19yr	30 yrs	Nil	Yes	Uterine device	13 Yrs	Regular	30 days	20 yrs	Gradual	No	Nil	No		No	Nil	Moderate	Moderate	147	65	30	70	110/70	NIL	NAD	O-Positive	11	362	8.7	NAD	2.4	5.0%		4mm	Atrophic Endometrium
8	44	10040630	Nil	Yes- Peri menopausal	3 Yrs	Polymenorrhagia	No	No	No	No	25 yrs	P3L3	3	22yr	19 yrs	Nil	Yes	Tubectomy	15 yrs	Regular	28-30 days	nil		No	H/O PID	No		No	Nil	Moderate	Moderate	142	52	27	84	120/82	Pallor	NAD	O-Positive	9.7	313	9	NAD	1.23	4.0%		8mm	Disordered proliferative Endometrium
9	48	10040637	Nil	Yes- Peri menopausal	2 months	Polymenorrhagia	No	No	No	No	27 yrs	P4L4	4	23yr	10 Yrs	Nil	No	nil	14 Yrs	Regular	30-40days	nil		No	Nil	No		No	Nil	Moderate	Moderate	140	52	26	88	110/74	NIL	NAD	O-Positive	8.2	473	9.5	NAD	3	3.0%		4mm	Endometrial Polyp
10	54	10042211	53 Yrs	Yes- Post menopausal	1 month	Post menopausal	No	No	No	No	40 yrs	P5L3D2	3	21yr	26 Yrs	Nil	Yes	Tubectomy	14 Yrs	Regular	28-30 days	1 year	Gradual	No	Nil	No		No	Nil	Moderate	Moderate	154	54	22.8	94	126/84	NIL	NAD	B-Positive	11.2	339	14	NAD	3	5.4%		7mm	Endometrial polyp
11	88	10045405	68yr	Yes- Post menopausal	4-5yrs	Post menopausal	No	Yes	No	No	75 yrs	P9L9	9	21yr	47yrs	Nil	Yes	Tubectomy	14 Yrs	Regular	30 days	40 yrs	Gradual	No	Nil	Yes	Breast Carcinoma	Yes	Nil	Moderate	Moderate	147	65	30	86	138/76	Pallor	Mastertong status	B-Positive	8.5	265	11.8	NAD	3.2	5.0%		6mm	Features of Chronic Inflammation of endometrium
12	51	10048532	Nil	Yes- Peri menopausal	2 months	Menorrhagia	No	No	No	No	29 yrs	P4L4	4	21yr	23 Yrs	Nil	Yes	Tubectomy	14 Yrs	Regular	30 days	Nil		No	Nil	No		No	Nil	Moderate	Moderate	140	61	29	82	120/70	NIL	NAD	B-Positive	9.7	272	5.4	NAD	4.8	5.0%		7mm	Proliferative phase
13	45	10050969	Nil	Yes- Peri menopausal	1 Yr	Menorrhagia	No	No	No	No	28 Yrs	P3L3	3	21yr	22 yrs	Nil	Yes	Tubectomy	14 Yrs	Regular	30 days	nil		No	HTN	No		No	Nil	Moderate	Moderate	142	58	28	72	124/80	NIL	NAD	B-Positive	9.7	406	10.6	NAD	1.83	6.0%		16mm	Secretory Endometrium
14	43	10051538	41 yrs	Yes- Post menopausal	3 days	Post menopausal	No	No	No	No	24 yrs	P2L2	2	22yr	19 yrs	Nil	No	nil	14 Yrs	Regular	28-30 days	2 Yrs	Gradual	No	Nil	No		No	Nil	Moderate	Moderate	146	50	23	90	124/76	NIL	NAD	O-Positive	14	264	7.4	NAD	1.56	4.8%		6mm	Endometrial Hyperplasia without Atypia
15	42	10051171	Nil	Yes- Peri menopausal	2 months	Menorrhagia	No	No	No	No	26 yrs	P2L2A1	2	20yr	23 Yrs	Spontaneous	Yes	Tubectomy	14 Yrs	Regular	28 days	nil		No	HbsAg, Positive Status	No		No	Nil	Moderate	Moderate	147	65	30	80	132/74	Pallor	NAD	O-Positive	10.1	285	10.4	NAD	2.1	4.8%		8mm	Proliferative Endometrium
16	41	10051786	Nil	Yes- Peri menopausal	3 months	Menorrhagia	No	No	No	No	22 yrs	P1L1A1	1	19yr	19yrs	Spontaneous	No	nil	14 Yrs	Regular	28-30 days	nil		No	Hypothyroid	No		No	Nil	Moderate	Moderate	144	58	27	88	112/70	NIL	NAD	B-Positive	12.1	300	7.7	NAD	4.5	5.0%		3.9mm	Poliferative Endometrium
17	62	10055338	52 Yrs	Yes- Post menopausal	4 days	Post menopausal	No	No	No	No	42 yrs	P2L2A1	2	20yr	30 yrs	Spontaneous	No	nil	14 Yrs	Regular	30 days	10 yrs	Gradual	No	DM-, HTN	No		No	Nil	Moderate	Moderate	150	54	24	82	120/68	NIL	NAD	A- Positive	13	208	6.8	NAD	2.83	6.9%		7.4mm	Atropic Endometrium
18	46	10065777	Nil	Yes- Peri menopausal	30 days	Menorrhagia	No	No	No	No	26 yrs	P2L2A1	2	20yr	20 Yrs	Spontaneous	No	nil	13 Yrs	Regular	3-4 Days	nil		No	Nil	No		No	Nil	Moderate	Moderate	147	65	30	86	106/86	Pallor	NAD	B-Positive	13.7	391	7.4	NAD	4.4	4.6%		2.21mm	Endometrial Hyperplasia without atypia
19	44	10065782	Nil	Yes- Peri menopausal	40-45 days	Menorrhagia	No	No	No	No	23 yrs	P2L1D1	1	20yr	18 yrs	Nil	Yes	Tubectomy	13 Yrs	Regular	28-30 days	nil		No	Nil	No		No	Nil	Moderate	Moderate	140	60	30	80	116/80	NIL	NAD	B-Positive	12.4	405	6.5	NAD	4.7	6.1%		4mm	Endometrial Hyperplasia with Atypia
20	41	10065858	Nil	Yes- Peri menopausal	1 Yr	polymenorrhagia	No	No	No	No	15 Yrs	P2L3	3	19yr	11 Yrs	Nil	Yes	Tubectomy	14 Yrs	Regular	5 Days	nil		No	Chronic cervicitis	No		No	Nil	Moderate	Moderate	139	58	30	82	112/70	Pallor	NAD	O-Positive	12.2	283	8.8	NAD	3.1	4.6%		4mm	Endometrial Hyperplasia without Atypia
21	60	10065662	53yr	Yes- Post menopausal	5 days	Post menopausal	No	No	No	No	40 yrs	P2L2A1	2	19yr	30 yrs	Spontaneous	Yes	Tubectomy	53 yrs	Regular	28-30 days	7 yrs	Gradual	No	T2 DM	No		No	Nil	Moderate	Moderate	141	61	30	80	116/80	NIL	NAD	O-Positive	13.4	197	8.4	NAD	1.43	7.5%		8.9mm	Atropic Endometrium
22	46	10067652	Nil	Yes- Peri menopausal	1 Yr	polymenorrhoea	No	No	No	No	28 Yrs	P2L2A1	2	19yr	24 Yrs	Spontaneous	Yes	Tubectomy	14 Yrs	Regular	28-30 days	nil	-	No	Nil	No		No	Nil	Moderate	Moderate	150	61	31	92	104/68	Pallor	NAD	O-Positive	8.7	394	7.5	NAD	3.8	5.8%		6mm	Endometrial polyp
23	44	10071026	Nil	Yes- Peri menopausal	3 Yrs	polymenorrhoea	No	Yes	No	No	10 Yrs	P1D1	0	19yr	19YR	Nil	No	nil	14 Yrs	Irregular	20 days	nil	-	No	HTN	No		No	Nil	Moderate	Moderate	140	62	31	88	136/90	Pallor	NAD	A- Positive	11	228	11.6	NAD	3.52	4.9%		6mm	Proliferative endometrium
24	52	10071027	50yr	Yes- Post menopausal	10 Yrs	Post menopausal	No	No	No	No	34 Yrs	P2L2A1	2	20yr	26 Yrs	Spontaneous	Yes	Tubectomy	13 Yrs	Regular	28-30 days	2 Yrs	Gradual	No	Hypothyriod	No		No	Nil	Moderate	Moderate	144	60	28	80	116/80	Pallor	NAD		12.8	144	7.9	NAD	2.72	4.2%		5mm	Endometrial Hyperplasia without Atypia
25	45	10072208	Nil	Yes- Peri menopausal	30 days	Menorrhagia	No	No	No	No	10 Yrs	P1L1	1	21yr	18 Yrs	Nil	No	nil	14 Yrs	Irregular	60 Days	nil		No	Nil	No		Yes	Nil	Moderate	Moderate	144	56	27	92	140/90	Pallor	NAD	A- Positive	12.2	330	7.7	NAD	0.93	5.7%		14mm	Endometrial Polyp
26	41	10073430	Nil	Yes- Peri menopausal	1 Yr	polymenorrhoea	No	Yes	No	No	18 yrs	P2L2	2	19yr	8 yrs	Induced	No	nil	13 Yrs	Regular	28 days	Nil		No	Arthritis	No		Yes	Nil	Moderate	Moderate	140	61	29	84	110/80	Pallor	NAD	AB-Positive	9.1	293	5.7	NAD	1.59	4.9%		7.9mm	Endometrial hyperplasia without Atypia
27	44	10073844	Nil	Yes- Peri menopausal	1 Yr	Menorrhagia	No	No	No	No	25 yrs	P1L1	1	20yr	20 Yrs	Nil	Yes	Tubectomy	13 Yrs	Regular	30 days	nil		No	Nil	No		No	Nil	Moderate	Moderate	142	63	31	98	126/90	Pallor	NAD	B-Positive	12	254	7.2	NAD	4.3	4.8%		14mm	Proliferative Endometrium
28	72	10074367	52yr	Yes- Post menopausal	4 days	Post menopausal	No	No	No	No	60 yrs	P6L6	6	21yr	52 Yrs	Nil	Yes	Tubectomy	12 Yrs	Regular	30 days	20yrs	Gradual	No	HTN, T2DM, Aortic Stero	No		No	Nil	Moderate	Moderate	142	58	28	74	122/80	Pallor	NAD	O-Positive	9.4	240	5.8	NAD	4.9	9.0%		7mm	Atrophic Endometrium
29	45	10080615	Nil	Yes- Peri menopausal	1 Yr	polymenorrhoea	No	No	No	No	29 yrs	P3L1 D2E1A4	1	18yrs	24 Yrs	Spontaneous	Yes	Tubectomy	14 Yrs	Regular	28-30 days	Nil		No	Hypothyroid	No		No	Nil	Moderate	Moderate	140	61	29	86	110/84	NIL	NAD	O-Positive	9.9	449	9.3	NAD	3.84	5.2%		6mm	Endometrial Hyperplasia without Atypia
30	53	10081374	Nil	Yes- Peri menopausal	1 Yr	Menorrhagia	No	No	No	No	32 yrs	P3L3A1	3	19yr	30 yrs	Nil	No	nil	13 Yrs	Irregular	1.5-2 month	Nil		No	HTN	No		No	Nil	Moderate	Moderate	140	55	28	86	13/84	NIL	NAD	A- Positive	10.4	444	12	NAD	4.3	5.1%		22.3mm	Endometrial Hyperplasia without atypia
31	50	10081453	Nil	Yes- Peri menopausal	1 Yr	Menorrhagia	No	No	No	No	28 Yrs	P2L2	2	18yrs	26 Yrs	Nil	No	nil	13 Yrs	Irregular	1.5-2 month	Nil		No	HTN	No		No	Nil	Moderate	Well	140	55	28	86	128/80	NIL	NAD	O-Positive	11.7	408	9	NAD	7.15	7.2%		11mm	Endometrial Hyperplasia without atypia
32	62	10081532	51 yrs	Yes- Post menopausal	15 days	Post menopausal	No	Yes	No	No	41yr	P5L5	5	19yr	27 yrs	Nil	No	nil		Regular	30-32 days	11 yrs	Gradual	No	HTN	No		No	Nil	Moderate	Moderate	142	54	26	86	130/84	NIL	NAD	O-Positive	12.9	343	11.5	NAD	3	5.7%		4mm	Atropic Endometrium
33	44	10083189	Nil	Yes- Peri menopausal	2 months	Menorrhagia	No	No	No	No	23 yrs	P3L2P1	2	21yr	15 Yrs	Spontaneous	No	nil	13 Yrs	Regular	28-30 days	Nil		No	Nil	No		yes- D&C on 04.06.24	Nil	Moderate	Moderate	140	61	29	84	122/80	NIL	NAD	O-Positive	12.2	419	8.6	NAD	3.62	6.0%		8mm	Endometrial Hyperplasia without atypia
34	49	10081495	Nil	Yes- Peri menopausal	2 months	Menorrhagia	No	Yes	No	No	26 yrs	P3L3	3	20yr	15 Yrs	Nil	No	nil	13 Yrs	Irregular	30-35 days	Nil		No	Nil	No		Yes	Nil	Moderate	Moderate	142	55	26	86	128/80		NAD	B-Positive	10.9	221	7.01	NAD	1.8	5.9%		6mm	Endometrial Polyp
35	45	10082702	Nil	Yes- Peri menopausal	6 Months	Menorrhagia	No	No	No	No	25 yrs	P1L1	2	19yr	19 yrs	Spontaneous	Yes	Tubectomy	14 Yrs	Regular	28-30 days	Nil		No	Rheumatoid arthritis	No		No	Nil	Moderate	Moderate	142	54	26	86	138/86	NIL	NAD	A- Positive	11	478	8	NAD	1.23	5.3%		7mm	Endometrail Hyperplasia without Atypia
36	44	10083193	Nil	Yes- Peri menopausal	10 days	Menorrhagia	No	Yes	No	No	20 yrs	P2L2A2	2	22yr	9 yrs	Spontaneous	Yes	OCP	13 Yrs	Regular	30 days	Nil		No	Nil	No		No	Nil	Moderate	Moderate	144	58	27	86	103/70	Pallor	NAD	O-Positive	11.8	451	8.1	NAD	1.2	4.7%		6.6mm	Endometrail Hyperplasia without Atypia
37	48	10082218	Nil	Yes- Peri menopausal	3 Yrs	polymenorrhoea	No	No	No	No	29 yrs	P2L2	2	23yr	20 yrs	Nil	Yes	Tubectomy	13 Yrs	Regular	28-30 days	Nil		No	Nil	No		No	Nil	Moderate	Moderate	145	58	27	80	120/84	Pallor	NAD	A- Positive	7.7	335	6.6	NAD	3	5.1%		4.2mm	Endometrial Hyperplasia without atypia
38	42	10085573	Nil	Yes- Peri menopausal	1 month	polymenorrhoea	No	No	No	No	20 yrs	P2L2A1	2	21yr	14 yrs	Spontaneous	Yes	Tubectomy	13 Yrs	Regular	28-30 days	Nil		No	Nil	No		No	Nil	Moderate	Moderate	148	70	31	84	118/78	Pallor	NAD	B-Positive	3.8	241	6.1	NAD	1.85	5.0%		8mm	Endometrial Hyperplasia with without Atypia
39	61	10086538	50yr	Yes- Post menopausal	6 Months	Post menopausal	No	Yes	No	No	60 yrs	P4L4	4	21yr	50 Yrs	Nil	No	nil	13 Yrs	Regular	30-35 days	Nil	Gradual	No	HTN	No		No	Nil	Moderate	Moderate	142	50	24.7	90	130/80	NIL	NAD	B-Positive	12.4	389	9.5	NAD	0.45	5.8%		6.5mm	Endometrial Hyperplasia with without Atypia
40	49	10086604	Nil	Yes- Peri menopausal	2-3 months	polymenorrhoea	No	Yes	No	No	32 yrs	P1L1	3	21yr	21YR	Nil	No	nil	14 Yrs	Irregular	1.5-2 monthly	Nil		No	Type 2 DM	No		Yes- Lap cholecystectomy x 3 yrs ago	Nil	Moderate	Moderate	150	65	28.8	80	132/88	NIL	NAD	A- Positive	12.5	360	9.6	NAD	1.63	6.8%		7mm	Proliferative endometrium
41	44	10086164	Nil	Yes- Peri menopausal	6 Months	polymenorrhoea	No	Yes	No	No	17 yrs	P2L2	2	21yr	13 yrs	Nil	Yes	Tubectomy	14 Yrs	Regular	30 days	Nil		No	Nil	No		No	Nil	Moderate	Moderate	144	56	27	78	112/76	NIL	NAD	A- Positive	8.9	258	8.9	NAD	1.28	6.4%		10mm	Secretory Endometrium
42	44	10086154	Nil	Yes- Peri menopausal	2 yrs	Menorrhagia	No	No	No	No	25 yrs	P3L3A1	3	22yr	20 yrs	Spontaneous	Yes	Tubectomy	13 Yrs	Regular	28-30 days	Nil		No	Nil	No		No	Nil	Moderate	Moderate	144	62	29	82	126/80	Pallor	NAD	B-Positive	11	350	8.9	NAD	2.5	4.7%		11mm	Endometrial Hyperplasia without Atypia
43	51	10085717	Nil	Yes- Peri menopausal	3 months	polymenorrhoea	No	No	No	No	36 Yrs	P1L1	1	19YR	19 yrs	Nil	Yes	Tubectomy	13 Yrs	Regular	28-30 days	Nil		No	Cerebral Venous Trombosin	No		No	Nil	Moderate	Moderate	144	62	29	90	126/80	Pallor	NAD	O-Positive	9.2	442	4.4	NAD	5.2	4.1%		27mm	Endometrial Hyperplasia without Atypia
44	48	10087560	Nil	Yes- Peri menopausal	8 Months	Menorrhagia	Yes	Yes	No	Yes	28 Yrs	P2L2A1	2	19yr	24 Yrs	Spontaneous	Yes	Tubectomy	14 Yrs	Regular	30 days	Nil		No	Nil	No		Yes	Nil	Moderate	Moderate	143	65	22	90	120/80	Pallor	NAD	A- Positive	11.9	306	6.8	NAD	2.59	4.6%		7mm	Secretory Endometrium
45	49	10087659	Nil	Yes- Peri menopausal	3 yrs	polymenorrhoea	No	No	No	No	31 yrs	P3L3A1	3	20yr	22 yrs	Spontaneous	Yes	Tubectomy	13 Yrs	Regular	28-30 days	Nil		No	Nil	No		No	Nil	Moderate	Moderate	140	60	30	90	118/74	NIL	NAD	O-Positive	11.9	319	9.4	NAD	2.53	5.2%		12.6mm	Endometrial Hyperplasia without Atypia
46	48	10086555	Nil	Yes- Peri menopausal	1 Yr	polymenorrhoea	No	No	No	No	38 yrs	p3l3	3	20yr	35 yrs	Nil	No	nil		Irregular	30-50 days	Nil		No	nil	No		No	Nil	Moderate	Moderate	148	60	27.3	86	120/74	NIL	NAD	O-Positive	10.7	353	10.5	NAD	3.47	4.6%		7.1mm	Endometrial Hyperplasia without Atypia
47	51	10089535	Nil	Yes- Peri menopausal	1 Yr	Menorrhagia	Yes	Yes x 15 days	No	No	31 yrs	P1L1	1	20yr	20YR	Spontaneous	No	nil	14 Yrs	Regular	28-30 days	Nil		No	HTN	No		No	Nil	Well	Moderate	144	56	27	80	126/80	NIL	NAD	B-Positive	12	280	4.8	NAD	4.41	5.2%		11.2mm	Endometrial Hyperplasia without Atypia
48	44	10089656	Nil	Yes- Peri menopausal	1.5 yrs	polymenorrhoea	No	No	No	No	25 yrs	P3L3A1	3	19yr	20 Yrs	nil	Yes	Tubectomy	13 Yrs	Regular	28-30 days	Nil		No	Nil	No		No	Nil	Moderate	Moderate	142	63	31	80	126/80	Pallor	NAD	B-Positive	11	350	8.9	NAD	2.5	4.7%		15mm	Endometrial Hyperplasia without Atypia
49	47	10085282	46yr	Yes- Post menopausal	4 days	Post menopausal	No	No	No	No	24 yrs	P2L2	2	19yr	16 yrs	nil	Yes	Tubectomy	14 yrs	Regular	30 days	1 yr	Gradual	No	nil	No		No	Nil	Moderate	Moderate	140	62	31	80	130/80	Pallor	NAD	O-Positive	13	445	8.9		3.7	5.3%		4mm	Atrophic Endometrium
50	44	10071393	Nil	Yes- Peri menopausal	1 Yr	polymenorrhoea	No	Yes	No	No	28 Yrs	P5L5	5	24 Yrs	15 Yrs	nil	Yes	Tubectomy	13 Yrs	Regular	28-30 days	Nil	-	No	Nil	No		No	Nil	Moderate	Moderate	142	58	28	96	124/72	Pallor	NAD	B-Positive	9.4	526	8.6	NAD	3	5.0%		6mm	endometrial Polyp
51	56	10087590	48yr	Yes- Post menopausal	6 Months	Post menopausal	Yes	Yes	No	No	35 yrs	P462D2	2	34 yrs	29 Yrs	Spontaneous	No	nil	13 Yrs	Regular	28-30 days	9 yrs		No	Hypothyroid	No		No	Nil	Moderate	Moderate	145	60	28	90	132/84	NIL	NAD	O-Positive	11	226	10	NAD	1.25	5.1%		4mm	Atrophic endometrium
52	44	10098216	Nil	Yes- Peri menopausal	1 month	Menorrhagia	no	no	no	no	27 years	p2l2	2	21YR	24yr	nil	yes	tubectomy	14 yrs	Regular	28-30days	nil	nil	No	anemia	No	no	No	Nil	poor	poor	140	40	18	84	120/70	pallor	NAD	o negative	12.6	220	9.2	NAD	2.1	0.047		10mm	Secretory Endometrium
53	40	10083289	Nil	Yes- Peri menopausal	8 months	Menorrhagia	no	yes	no	no	17yrs	p3l3	3	18yrs	13	Spontaneous	yes	Tubectomy	13yrs	Regular	30days	nil	nil	No	HTN	No	no	No	Nil	moderate	moderate	140	58	29.5	84	120/80	nad	nad	b positve	9.2	587	9.7	nad	0.76	5.1%		15mm	Endometrial Hyperplasia without Atypia
54	41	10083257	Nil	Yes- Peri menopausal	6months	polymenorrhea	no	no	no	no	22yr	p2l2	2	19yr	22	Nil	yes	Tubectomy	13yrs	Regular	30days	nil	nil	No	nil	No		No	Nil	moderate	moderate	142	65	30	86	124/80	nad	nad	A-positive	11.2	392	12.6	nad	2.4	5.0%		14mm	Endometrial Hyperplasia without Atypia
55	43	10089822	Nil	Yes- Peri menopausal	2months	menorrhagia	no	no	no	no	26yrs	p3l3	3	18yrs	22	nil	yes	Tubectomy	14yrs	Regular	30days	nil	nil	No	nnil	No		No	Nil	moderate	Moderate	150	52	23	86	126/84	nil	nad	AB positivr	12.8	401	11.7	NAD	2.4	5.0%		13.2mm	Endometrial Hyperplasia without Atypia
56	44	10090185	Nil	Yes- Peri menopausal	3months	polymenorrhea	no	no	no	no	20yrs	p1l1	1	19yr	19	nil	no	nil	13yrs	Regular	30yrs	nil	nil	No	nil	No		No	Nil	moderate	moderate	150	51	23	86	120/70	nil	nad	Opositive	12.7	240	5.1	nad	2.4	5.0%		14.5mm	Endometrial Hyperplasia without Atypia
57	41yrs	10093201	Nil	Yes- Peri menopausal	2months	Menorrhagia	no	no	no	no	21yrs	p2l2	2	21yr	16yrs	nil	yes	Tubectomy	13yrs	Regular	28days	nil	nil	No	nil	No		No	Nil	moderate	moderate	150	52	23	89	116/76	nil	nad	o poistive	11.2	312	6.7	nad	5.1	4.1%		11mm	Endometrial Hyperplasia without Atypia
58	47	10062723	Nil	Yes- Peri menopausal	1yr	Menorrhagia	no	yes	nno	no	35yrs	p3l3	3	20yr	35	nil	nil	Tubectomy	12	Regular	30days	nil	nil	No	nil	No		No	Nil	moderate	moderate	138	58	30.5	86	128/74	nil	nil	o positive	9	0.1	304	8.63	1.23	3.4%		8mm	secretory endometrium
59	40	10083110	Nil	Yes- Peri menopausal	2yrs	polymenorrhea	no	yes	no	no	18yrs	p2l2	2	19yr	16	nil	yes	Tubectomy	13	Regular	30days	nil	nil	No	anemia	No		No	Nil	moderate	moderate	141	60	30	98	120/80	pallor	nad	o positive	10.1	252	8.6	nad	1.53	5.3%		15mm	Endometrial Hyperplasia without Atypia
60	42	10064735	Nil	Yes- Peri menopausal	yes	polymenorrhea	no	no	no	no	20yrs	p1l1	1	22yr	22YR	no	no	nil	13	Regular	30days	nil	nil	No	type 2 DM	No		No	Nil	moderate	Moderate	152	70	30.3	90	126/80	nol	nad	o psitive	10	158	7.1	nad	2.86	5.0%		17.8mm	Endometrial Hyperplasia without Atypia
61	41	100427728	Nil	Yes- Peri menopausal	1YR	Menorrhagia	no	no	no	no	27yr	p3l3	3	23yr	18yr	nil	no	nil	12yr	Regular	28days	nil	nil	No	nil	No		No	Nil	moderate	Moderate	150	68	29	80	128/88	pallor	nad	b positve	10	178	5.8	nad	3	6.0%		4mm	atrophic endometrium

62	56yr	10046891	54yr	Yes- Post menopausal	1yr	post menopausal	yes	no	no	no	35yrs	p2l2	2	21yr	30yr	nil	yes	Tubectomy	13yr	Regular	30days	1yr	gradual	No	nil	No		No	Nil	moderate	moderate	148	60	27.3	84	122/76	pallor	nad	o positive	10	180	7	nad	5	4.8%		9mm	Endometrial Hyperplasia without Atypia
63	42yr	10063267	Nil	Yes- Peri menopausal	1month	Menorrhagia	no	no	no	no	22yr	p2l2	2	21yr	24yr	nil	yes	Tubectomy	13yr	regular	28 days	nil	nil	No	dm	No		No	Nil	moderate	moderate	144	56	27	90	116/80	nil	nad	AB positivr	10.8	292	7.6	nad	4.9	7.0%		17.8mm	Endometrial Hyperplasia without Atypia
64	60yr	10065661	50yr	Yes- Post menopausal	4 month	post menopausal	no	no	no	no	38yr	p2l2a1	2	21yr	28yr	Spontaneous	no	nil	13yr	Regular	30days	8yr	gradual	No	dm	No		No	Nil	moderate	moderate	148	54	24	66	120/64		NAD	O-Positive	109	242	11.3	NAD	1.28	6.0%		8.9mm	Endometrial Hyperplasia without Atypia
65	55yr	10054639	48yr	Yes- Post menopausal	7 years	post menopausal	no	no	no	no	42yr	p5l5	5	21yr	31yr	nil	no	nil	13yr	Regular	28-30 days	nil	gradual	No	nil	No		No	Nil	moderate	moderate	145	58	27	90	116/80	Pallor	NAD	O-Positive	10	257	7.7	NAD	0.06	5.7%		11.1mm	Endometrial Hyperplasia without Atypia
66	60yr	10036659	52yr	Yes- Post menopausal	7 dayd	post menopausal	no	no	no	no	21 yr	p2l2	2	21yr	15 Yrs	nil	yes	Tubectomy	12yr	Regular	20 days	nil	gradual	No	nil	No		No	Nil	moderate	moderate	150	54	24	94	130/68	Pallor	NAD	O-Positive	10.2	267	9.5	NAD	4.8	5.1%		15mm	Endometrial Hyperplasia without Atypia
67	46YR	10044944	Nil	Yes- Peri menopausal	2months	polymenorrhoea	no	no	no	no	27yr	p2l2	2	21yr	15 Yrs	nil	yes	Tubectomy	12yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	156	60	24.7	66	120/84	Pallor	NAD	O-Positive	11	212	5.6	NAD	4	4.1%		10mm	Proliferative Endometrium
68	41yrs	10043313	Nil	Yes- Peri menopausal	6 months	Menorrhagia	no	no	no	no	21yrs	p3l3	3	21yr	12yr	nil	yes	Tubectomy	13yr	Regular	60 Days	nil		No	nil	No		No	Nil	moderate	moderate	147	65	30	80	122/90	NIL	NAD	O-Positive	9.9	262	8.8	NAD	3	6.3%		8mm	Proliferative Endometrium
69	42	10043212	Nil	Yes- Peri menopausal	3 months	Menorrhagia	no	no	no	no	22yr	p4l4	4	22yr	11yr	nil	yes	Tubectomy	14yrs	Regular	28 days	nil		No	dm,htn	No		No	Nil	moderate	moderate	150	60	26.7	80	124/80	Pallor	NAD	O-Positive	9.4	250	10	NAD	4.1	5.0%		16mm	Endometrial Hyperplasia without Atypia
70	40	10043121	Nil	Yes- Peri menopausal	8 months	polymenorrhoea	no	no	no	no	25yr	p2l2	2	24yr	18yr	nil	no	nil	13yr	Regular	30 days	nil		No	nil	No		No	Nil	moderate	moderate	147	65	30	70	110/70	NIL	NAD	O-Positive	11	362	8.7	NAD	2.4	5.0%		7mm	Proliferative Endometrium
71	41	10063312	Nil	Yes- Peri menopausal	1 year	polymenorrhoea	no	no	no	no	23yr	p2l2	2	22yr	15yr	nil	yes	Tubectomy	13yr	Regular	30 days	nil		No	nil	No		No	Nil	moderate	moderate	142	52	27	84	120/82	Pallor	NAD	O-Positive	9.7	313	9	NAD	1.23	4.7%		10mm	endometrial polyp
72	50	10061975	Nil	Yes- Peri menopausal	6 Months	Menorrhagia	no	no	no	no	31yr	p3l2	2	18yrs	20yr	nil	yes	Tubectomy	12yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	140	52	26	88	110/74	NIL	NAD	O-Positive	8.2	473	9.5	NAD	1.23	4.7%		11mm	Proliferative Endometrium
73	54	10068758	Nil	Yes- Peri menopausal	1 year	polymenorrhoea	no	no	no	no	31yr	p4l3	3	19yr	25yr	nil	yes	Tubectomy	13yr	Regular	1.5-2 month	nil		No	nil	No		No	Nil	moderate	moderate	154	54	22.8	94	126/84	NIL	NAD	B-Positive	11.2	339	14	NAD	3	5.4%		9mm	Proliferative Endometrium
74	53	10073903	43yr	Yes- Post menopausal	1-2 days	Post menopausal	no	no	no	no	35yrs	p3l3	3	18yrs	28yr	nil	yes	Tubectomy	14yrs	Regular	1.5-2 month	nil		No	nil	No		No	Nil	moderate	moderate	142	52	27	86	138/76	Pallor	NAD	B-Positive	8.5	265	11.8	NAD	3.2	5.0%		4mm	atrophic endometrium
75	53	10075580	Nil	Yes- Peri menopausal	3 yrs	polymenorrhea	no	no	no	no	33yr	p2l2	2	19yr	26yr	nil	yes	Tubectomy	11yr	Regular	30-32 days	nil		No	nil	No		No	Nil	moderate	moderate	140	52	26	82	120/70	NIL	NAD	B-Positive	9.7	272	5.4	NAD	4.8	5.0%		6mm	endometrial polyp
76	45	10077162	Nil	Yes- Peri menopausal	1 Yr	menorrhagia	no	no	no	no	25yr	p2l2	2	21yr	20yr	nil	yes	Tubectomy	10yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	142	58	28	72	124/80	NIL	NAD	B-Positive	9.7	406	10.6	NAD	1.83	6.0%		6.7mm	Proliferative Endometrium
77	43	10077151	Nil	Yes- Peri menopausal	1 Yr	Menorrhagia	no	no	no	no	23yr	p4l4a1	4	20yr	14yr	1 spontaneous	yes	Tubectomy	12yr	Regular	30-35 days	nil		No	nil	No		No	Nil	moderate	moderate	146	50	23	90	116/80	NIL	NAD	O-Positive	14	264	7.4	NAD	1.56	4.8%		22mm	Endometrial Hyperplasia without Atypia
78	45	10079197	Nil	Yes- Peri menopausal	1.5 yrs	Menorrhagia	no	no	no	no	26yrs	p3l3a1	3	19yr	13yr	1 spontaneous	yes	Tubectomy	13yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	138	58	30.5	80	132/74	Pallor	NAD	O-Positive	10.1	285	10.4	NAD	2.1	4.8%		11.5mm	Proliferative Endometrium
79	42	10077302	Nil	Yes- Peri menopausal	1month	Menorrhagia	no	no	no	no	21yrs	p2l2a1	2	22yr	10yr	1 induced	yes	Tubectomy	10yr	Regular	30 days	nil		No	nil	No		No	Nil	moderate	moderate	144	58	27	88	112/70	NIL	NAD	B-Positive	12.1	300	7.7	NAD	4.5	5.0%		13mm	Endometrial Hyperplasia without Atypia
80	47	10077812	Nil	Yes- Peri menopausal	1 Yr	polymenorrhea	no	no	no	no	25yr	P2L1D1	1	23yr	17yr	1 spontaneous	no	nil	12yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	150	54	24	82	120/68	NIL	NAD	A- Positive	13	208	6.8	NAD	2.83	6.9%		9mm	Proliferative Endometrium
81	40	10081068	Nil	Yes- Peri menopausal	6 Months	polymenorrhea	no	no	no	no	20yrs	p2l2	2	21yr	12yr	nil	yes	Tubectomy	14yrs	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	144	56	27	86	106/86	Pallor	NAD	B-Positive	13.7	391	7.4	NAD	4.4	4.6%		10mm	Proliferative Endometrium
82	51	10092207	Nil	Yes- Peri menopausal	1 month	Menorrhagia	no	no	no	no	30yr	p4l4	4	21yr	15yr	nil	yes	Tubectomy	13yr	Regular	30-35 days	nil		No	nil	No		No	Nil	moderate	moderate	140	60	30	80	116/80	NIL	NAD	B-Positive	12.4	405	6.5	NAD	4.7	6.1%		12mm	Endometrial Hyperplasia without Atypia
83	46	10094024	44yr	Yes- Post menopausal	8 months	post menopausal	no	no	no	no	26yrs	p2l2	2	21yr	16yrs	nil	yes	Tubectomy	14yrs	Regular	1.5-2 monthly	nil		No	nil	No		No	Nil	moderate	moderate	139	58	30	82	112/70	Pallor	NAD	O-Positive	12.2	283	8.8	NAD	3.1	4.6%		9mm	pill endometrium
84	51	10032902	Nil	Yes- Peri menopausal	6months	polymenorrhoea	no	no	no	no	31yr	p2l2a1	2	21yr	20yr	1 spontaneous	yes	Tubectomy	13yr	Regular	30 days	nil		No	nil	No		No	Nil	moderate	moderate	141	61	30	80	116/80	NIL	NAD	O-Positive	13.4	197	8.4	NAD	1.43	7.5%		18mm	Endometrial Hyperplasia without Atypia
85	44	10040631	43yr	Yes- Post menopausal	2months	post menopausal	no	no	no	no	24yr	p2l2	2	22yr	15yr	nil	yes	Tubectomy	12yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	150	61	31	92	104/68	Pallor	NAD	O-Positive	8.7	394	7.5	NAD	3.8	5.8%		11mm	dissordered proliferative endometrium
86	41	10047574	40yr	Yes- Post menopausal	3months	post menopausal	no	no	no	no	22yr	p3l3	3	20yr	12yr	nil	yes	Tubectomy	13yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	140	62	31	88	136/90	Pallor	NAD	A- Positive	11	228	11.6	NAD	3.52	4.9%		10mm	Proliferative Endometrium
87	47	10043757	46yr	Yes- Post menopausal	2months	post menopausal	no	no	no	no	28yr	p6l6	6	19yr	8yr	nil	yes	Tubectomy	14yrs	Regular	30 days	nil		No	nil	No		No	Nil	moderate	moderate	144	60	28	80	116/80	Pallor	NAD	o positive	12.8	144	7.9	NAD	2.72	4.2%		8mm	Proliferative Endometrium
88	51	10048531	Nil	Yes- Peri menopausal	1yr	polymenorrhoea	no	no	no	no	31yr	p3l3	3	20yr	16yrs	nil	yes	Tubectomy	11yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	144	56	27	92	140/90	Pallor	NAD	A- Positive	12.2	330	7.7	NAD	0.93	5.7%		12mm	Proliferative Endometrium
89	42	10051501	Nil	Yes- Peri menopausal	2yrs	Menorrhagia	no	no	no	no	22yr	p3l2	2	20yr	12yr	nil	yes	Tubectomy	10yr	Regular	30-50 days	nil		No	dm	No		No	Nil	moderate	moderate	144	56	27	84	110/80	Pallor	NAD	AB-Positive	9.1	293	5.7	NAD	1.59	4.9%		11mm	Proliferative Endometrium
90	40	10051441	Nil	Yes- Peri menopausal	yes	Menorrhagia	no	no	no	no	20yrs	p2l2	2	20yr	14yr	nil	yes	Tubectomy	12yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	142	63	31	98	126/90	Pallor	NAD	B-Positive	12	254	7.2	NAD	4.3	4.8%		15mm	Endometrial Hyperplasia without Atypia
91	47	10056045	Nil	Yes- Peri menopausal	1YR	Menorrhagia	no	no	no	no	28yr	p3l3	3	19yr	11yr	nil	yes	Tubectomy	13yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	142	58	28	74	122/80	Pallor	NAD	O-Positive	9.4	240	5.8	NAD	4.9	9.0%		15mm	pill endometrium
92	48	10055996	Nil	Yes- Peri menopausal	1yr	polymenorrhoea	no	no	no	no	29yr	p3l3	3	19yr	17yr	nil	yes	Tubectomy	10yr	Regular	30 days	nil		No	nil	No		No	Nil	moderate	moderate	140	61	29	86	110/84	nil	NAD	O-Positive	9.9	449	9.3	NAD	3.84	4.7%		12mm	Proliferative Endometrium
93	52	10056048	Nil	Yes- Peri menopausal	3 yrs	Menorrhagia	no	no	no	no	33yr	p4l4	4	19yr	20yr	nil	yes	Tubectomy	12yr	Regular	28-30 days	nil		No	dm htn	No		No	Nil	moderate	moderate	140	55	28	86	13/84	nil	NAD	A- Positive	10.4	444	12	NAD	4.3	5.1%		7mm	Proliferative Endometrium
94	59	10060802	50yr	Yes- Post menopausal	1 Yr	post menopausal	no	no	no	no	39yr	p1l1	1	19yr	19	nil	no	nil	14yrs	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	140	55	28	86	128/80	nil	NAD	O-Positive	11.7	408	9	NAD	7.15	7.2%		10mm	Endometrial Hyperplasia without Atypia
95	48	10057560	Nil	Yes- Peri menopausal	1 Yr	Menorrhagia	no	no	no	no	28yr	p2l2	2	20yr	18yr	nil	yes	Tubectomy	13yr	Regular	30-50 days	nil		No	nil	No		No	Nil	moderate	moderate	142	54	26	86	130/84	nil	NAD	O-Positive	12.9	343	11.5	NAD	3	5.7%		8mm	Proliferative Endometrium
96	43	10062706	Nil	Yes- Peri menopausal	1.5 yrs	polymenorrhoea	no	no	no	no	23yr	p3l3	3	21yr	11yr	nil	yes	Tubectomy	14yrs	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	144	56	27	84	122/80	nil	NAD	O-Positive	12.2	419	8.6	NAD	3.62	6.0%		9mm	Proliferative Endometrium
97	53	10062740	Nil	Yes- Peri menopausal	2 months	menorrhagia	no	no	no	no	34yr	p2l2	2	19yr	25yr	nil	yes	Tubectomy	13yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	142	55	26	86	128/80	nil	NAD	B-Positive	10.9	221	7.01	NAD	1.8	5.9%		5mm	atrophic endometrium
98	45	10073413	Nil	Yes- Peri menopausal	1 Yr	polymenorrhoea	no	no	no	no	26yrs	p2l2	2	20yr	16yrs	nil	yes	Tubectomy	13yr	Regular	30 days	nil		No	nil	No		No	Nil	moderate	moderate	142	54	26	86	138/86	NIL	NAD	A- Positive	11	478	8	NAD	1.23	5.3%		9.5mm	Proliferative Endometrium
99	41	10083934	Nil	Yes- Peri menopausal	6 Months	polymenorrhoea	no	no	no	no	21yrs	p2l2	2	21yr	15yr	nil	yes	Tubectomy	10yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	144	58	27	86	103/70	Pallor	NAD	O-Positive	11.8	451	8.1	NAD	1.2	4.7%		6.8mm	Proliferative Endometrium
100	45	10082491	Nil	Yes- Peri menopausal	1month	Menorrhagia	no	no	no	no	20yrs	p2l2	2	20yr	14yr	nil	yes	Tubectomy	12yr	Regular	28-30 days	nil		No	nil	No		No	Nil	moderate	moderate	142	63	31	98	126/90	Pallor	NAD	B-Positive	12	254	7.2	NAD	4.3	4.8%		5.3mm	Endometrial Hyperplasia without Atypia