Volume 3, Issue 10, 2025

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

FREQUENCY OF ENDOMETRIAL HYPERPLASIA AMONG FEMALE PRESENTING WITH ABNORMAL UTERINE BLEEDING

Dr. Ommama Ayaz Wali[1], Dr. Saadia Shamsher[*2]

[*1]*Department of Gynaecology & Obstetrics C, Hayatabad Medical Complex-Peshawar*
[*2]*Associate Professor, Department of Gynaecology & Obstetrics C, Hayatabad Medical Complex-Peshawar*

[1]ommamaktk@gmail.com, [*2]saadia_shamshe@yahoo.com

DOI: http://doi.org/10.5281/zenodo.18996984

Keywords
Abnormal uterine bleeding, Endometrial hyperplasia, Transvaginal sonography, Menopause, Obesity, Endometrial thickness.

Article History
Received: 05 July 2025
Accepted: 20 November 2025
Published: 30 December 2025

Copyright @Author
Corresponding Author: *
Dr. Saadia Shamsher

Abstract

BACKGROUND:

Abnormal uterine bleeding (AUB) is one of the most common gynecological problems, affecting women across reproductive and postmenopausal age groups. It is often associated with significant morbidity and may be an early indicator of endometrial pathology, including hyperplasia and carcinoma. Transvaginal sonography (TVS) serves as a valuable, non-invasive diagnostic tool for assessing endometrial thickness and detecting endometrial abnormalities. The aim of this study was to determine the frequency of endometrial hyperplasia among females presenting with abnormal uterine bleeding.

METHODS:

This cross-sectional study was conducted in the Department of Obstetrics and Gynecology, Hayatabad Medical Complex, Peshawar, from 1st June 2024 to 30th June 2025, after approval from the Institutional Ethical Review Committee HMC- Peshawar dated 10th November 2025. A total of 188 female patients aged 20–60 years presenting with AUB were enrolled through non-probability consecutive sampling. Patients with bleeding disorders, adnexal masses, malignancy, or those on anticoagulants were excluded. Data was analyzed using IBM SPSS version 25.

RESULTS:

The mean age of participants was 39.6 ± 7.8 years, and the mean BMI was 27.4 ± 4.5 kg/m². Endometrial hyperplasia was identified in 64 (34.0%) patients. The condition was significantly associated with age ≥40 years ($p = 0.011$), obesity (BMI ≥30 kg/m²; $p = 0.007$), postmenopausal status ($p < 0.001$), and disease duration >6 months ($p = 0.003$). Logistic regression revealed postmenopausal status (Adjusted OR = 5.36, 95% CI: 2.25–12.77, $p < 0.001$) and obesity (Adjusted OR = 3.18, 95% CI: 1.42–7.12, $p = 0.005$) as the strongest independent predictors of endometrial hyperplasia.

CONCLUSION:

Endometrial hyperplasia was observed in one-third of women presenting with AUB and was significantly associated with older age, obesity, postmenopausal status, and longer disease duration. These findings emphasize the need for early evaluation of high-risk women to ensure prompt diagnosis and management of premalignant endometrial conditions.

Volume 3, Issue 10, 2025

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

INTRODUCTION

Menstrual disorders are among the most common gynecological problems affecting women of reproductive age, with approximately one in five women experiencing significant menstrual irregularities during their lifetime. Abnormal uterine bleeding (AUB) is one of the most prevalent and distressing menstrual disorders.[1] The global prevalence of AUB ranges between 5% and 15%, with higher rates reported in developing countries, including Pakistan.[1] In one local study involving 1600 gynecological patients, 400 (25%) were diagnosed with AUB, reflecting the considerable burden of this condition in the clinical setting. Risk factors for AUB include a wide spectrum of gynecological pathologies, pregnancy-related disorders, and systemic medical conditions.[2]

AUB is particularly common in peri-menopausal and post-menopausal women, accounting for more than 70% of gynecological complaints in this group. It is defined as any bleeding pattern that deviates in frequency, duration, or volume from normal menstrual cycles. The primary objective in evaluating these patients is to exclude endometrial carcinoma and its precursor lesion, endometrial hyperplasia, which may arise due to unopposed estrogen stimulation of the endometrium.[3]

Traditional screening modalities such as vaginal or cervical cytology are inadequate for detecting endometrial carcinoma. Although intrauterine sampling and hysteroscopy are reliable diagnostic procedures, their invasive nature, cost, and the requirement for specialized expertise limit their routine use.[4] In contrast, transvaginal sonography (TVS) is a non-invasive, safe, and widely available imaging tool that provides valuable information regarding endometrial thickness and correlates well with histopathological findings.[5]

A study by Ayesha et al. reported that the frequency of endometrial hyperplasia among women presenting with AUB was 22.7%.[6] However, there remains a paucity of local data on the prevalence of endometrial hyperplasia among women with AUB in our population. No recent study has been conducted on this topic at our institution. The findings of the present study will help gynecologists better understand the frequency and clinical predictors of endometrial hyperplasia in women presenting with AUB and facilitate early diagnosis and management of precancerous endometrial conditions.

MATERIALS AND METHODS

This cross-sectional study was conducted in the Department of Obstetrics and Gynecology, Hayatabad Medical Complex, Peshawar, Pakistan, from 1st June 2024 to 30th June 2025, following approval from the Institutional Ethical Review Committee HMC - Peshawar, dated 10th November 2025, the study was carried out over six months after approval of the research synopsis.

The sample size was calculated using the World Health Organization (WHO) sample size calculator, taking an anticipated frequency of endometrial hyperplasia among patients with abnormal uterine bleeding of 22.7%, a margin of error of 6%, and a 95% confidence level. The calculated sample size was 188 participants, selected through a non-probability consecutive sampling technique.

Female patients aged 20 to 60 years presenting with abnormal uterine bleeding (AUB) as per operational definitions were included in the study. Patients with a history of bleeding disorders, adnexal masses, or malignant or premalignant vaginal or vulvar lesions, as well as those taking antiplatelet or anticoagulant therapy, were excluded.

After obtaining ethical approval, eligible patients were enrolled from the outpatient department of Gynecology. Written informed consent was obtained from each participant after explaining the purpose, benefits, and potential risks of the study. Baseline demographic and clinical data, including age, body mass index (BMI), menopausal status, and disease duration, were recorded on a predesigned proforma.

All patients clinically diagnosed with AUB underwent transvaginal sonography (TVS) for assessment of endometrial thickness. The endometrium was measured at its thickest point in the longitudinal plane using a 7.5 MHz vaginal

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

transducer, including both endometrial layers from one basalis to the contralateral basalis through the uterine cavity, and recorded in millimeters. All ultrasonographic examinations were performed by an on-duty consultant radiologist with a minimum of five years of post-fellowship experience, who was blinded to the patients' clinical information. The presence of endometrial hyperplasia was noted according to operational definitions.

Data were analyzed using IBM SPSS Statistics version 25 (IBM Corp., Armonk, NY, USA). The Shapiro–Wilk test was applied to assess normality of quantitative variables. Quantitative variables such as age, BMI, and disease duration were expressed as mean ± standard deviation (SD) or median (interquartile range) depending on data distribution. Qualitative variables such as menopausal status (pre-menopausal or post-menopausal) and endometrial hyperplasia (yes/no) were expressed as frequencies and percentages.

Endometrial hyperplasia was stratified according to age group, BMI category, menopausal status, and disease duration. Post-stratification analyses were conducted using the Chi-square test or Fisher's exact test as appropriate. Binary logistic regression analysis was applied to identify independent predictors of endometrial hyperplasia. A p-value ≤ 0.05 was considered statistically significant.

RESULT:

A total of 188 female patients presenting with abnormal uterine bleeding were included in the study. The mean age of participants was 39.6 ± 7.8 years, and the mean BMI was 27.4 ± 4.5 kg/m². The mean duration of symptoms was 7.9 ± 4.8 months. Of the total, 128 (68.1%) were pre-menopausal, while 60 (31.9%) were post-menopausal. Most participants were multiparous (79.8%), and the most frequent bleeding pattern was menorrhagia (52.1%), followed by metrorrhagia (23.4%) and postmenopausal bleeding (16.0%).

Out of 188 patients, endometrial hyperplasia was diagnosed in 64 cases (34.0%), while 124 (66.0%) had no evidence of hyperplasia. This indicates that approximately one in every three women presenting with abnormal uterine bleeding had endometrial hyperplasia on histopathological evaluation.

Endometrial hyperplasia was most prevalent among women aged 41–50 years (65.6%), followed by the 31–40 years (28.1%) group, whereas only 6.3% of cases were in the 20–30 years group. A significant association was found between increasing age and the presence of endometrial hyperplasia ($p = 0.011$). Obesity was also strongly associated with endometrial hyperplasia; among women with hyperplasia, 50.0% were obese (BMI ≥30 kg/m²), compared to only 27.4% in the non-hyperplasia group, showing a significant relationship ($p = 0.007$).

Endometrial hyperplasia was markedly more frequent among post-menopausal women (75.0%) compared to pre-menopausal women (25.0%), which was highly significant ($p < 0.001$). Patients with a symptom duration longer than 6 months were more likely to have endometrial hyperplasia (71.9%) compared to those with a duration of 6 months or less (28.1%) ($p = 0.003$). Although endometrial hyperplasia was slightly more common among multiparous women, this relationship was not statistically significant ($p = 0.312$). Similarly, no significant difference was observed across different types of bleeding patterns ($p = 0.642$), though hyperplasia was relatively more frequent among those presenting with menorrhagia and postmenopausal bleeding.

Variables showing significance in univariate analysis (age, BMI, menopausal status, and disease duration) were entered into a binary logistic regression model to determine independent predictors of endometrial hyperplasia. After adjustment, the following factors remained significant: age ≥40 years (Adjusted OR = 2.62, 95% CI: 1.15–5.95, $p = 0.022$), BMI ≥30 kg/m² (Adjusted OR = 3.18, 95% CI: 1.42–7.12, $p = 0.005$), post-menopausal status (Adjusted OR = 5.36, 95% CI: 2.25–12.77, $p < 0.001$), and disease duration >6 months (Adjusted OR = 2.04, 95% CI: 1.02–4.10, $p = 0.043$). These results demonstrate that post-menopausal status and obesity were the strongest

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

independent predictors of endometrial hyperplasia, followed by older age and longer disease duration.

Graphical representation of data showed that the frequency of endometrial hyperplasia was 34% (Figure 1). The trend of increasing prevalence with advancing age (Figure 2) and higher BMI (Figure 3) was evident. Post-menopausal women showed a substantially higher proportion of hyperplasia than pre-menopausal women (Figure 4).

Overall, endometrial hyperplasia was found in about one-third of women presenting with abnormal uterine bleeding and was significantly associated with older age, obesity, post-menopausal status, and prolonged disease duration. These findings highlight the importance of early evaluation and endometrial assessment, especially in obese and post-menopausal women, to detect pre-malignant changes at an early stage

Table 1. Baseline Characteristics of Study Participants (n = 188)

Variable	Mean ± SD / n (%)
Age (years)	39.6 ± 7.8
Weight (kg)	68.9 ± 9.7
Height (cm)	157.8 ± 6.9
BMI (kg/m²)	27.4 ± 4.5
Disease duration (months)	7.9 ± 4.8
Menopausal status	Pre-menopause: 128 (68.1%) / Post-menopause: 60 (31.9%)
Parity	Nulliparous: 38 (20.2%) / Multiparous: 150 (79.8%)
Type of bleeding	Menorrhagia: 98 (52.1%) / Metrorrhagia: 44 (23.4%) / Postmenopausal: 30 (16.0%) / Others: 16 (8.5%)

Table 2. Frequency of Endometrial Hyperplasia

Endometrial Hyperplasia	Frequency (n)	Percentage (%)
Present	64	34.0
Absent	124	66.0
Total	188	100

Table 3. Association of Endometrial Hyperplasia with Study Variables (n = 188)

Variable	Endometrial Hyperplasia Present n (%)	Absent n (%)	P-value
Age group (years)			
20–30	4 (6.3)	32 (25.8)	0.011*
31–40	18 (28.1)	48 (38.7)	
41–50	42 (65.6)	44 (35.5)	
BMI (kg/m²)			
Normal (<25)	10 (15.6)	46 (37.1)	0.007*
Overweight (25–29.9)	22 (34.4)	44 (35.5)	
Obese (≥30)	32 (50.0)	34 (27.4)	
Menopausal status			
Pre-menopause	16 (25.0)	112 (90.3)	<0.001*
Post-menopause	48 (75.0)	12 (9.7)	
Disease duration			

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

≤6 months	18 (28.1)	84 (67.7)	0.003*
>6 months	46 (71.9)	40 (32.3)	
Parity			
Nulliparous	10 (15.6)	28 (22.6)	0.312
Multiparous	54 (84.4)	96 (77.4)	
Type of bleeding			
Menorrhagia	34 (53.1)	64 (51.6)	0.642
Metrorrhagia	14 (21.9)	30 (24.2)	
Postmenopausal bleeding	16 (25.0)	14 (11.3)	

Table 4. Binary Logistic Regression for Predictors of Endometrial Hyperplasia

Variable	Adjusted OR	95% CI	P-value
Age ≥40 years	2.62	1.15 – 5.95	0.022*
BMI ≥30 kg/m²	3.18	1.42 – 7.12	0.005*
Post-menopausal status	5.36	2.25 – 12.77	<0.001*
Disease duration >6 months	2.04	1.02 – 4.10	0.043*

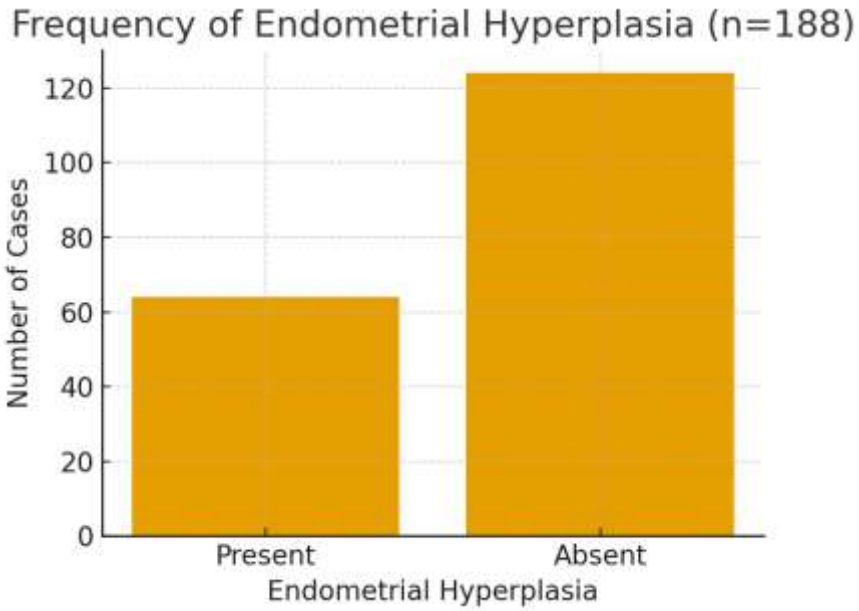


FIGURE:1

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

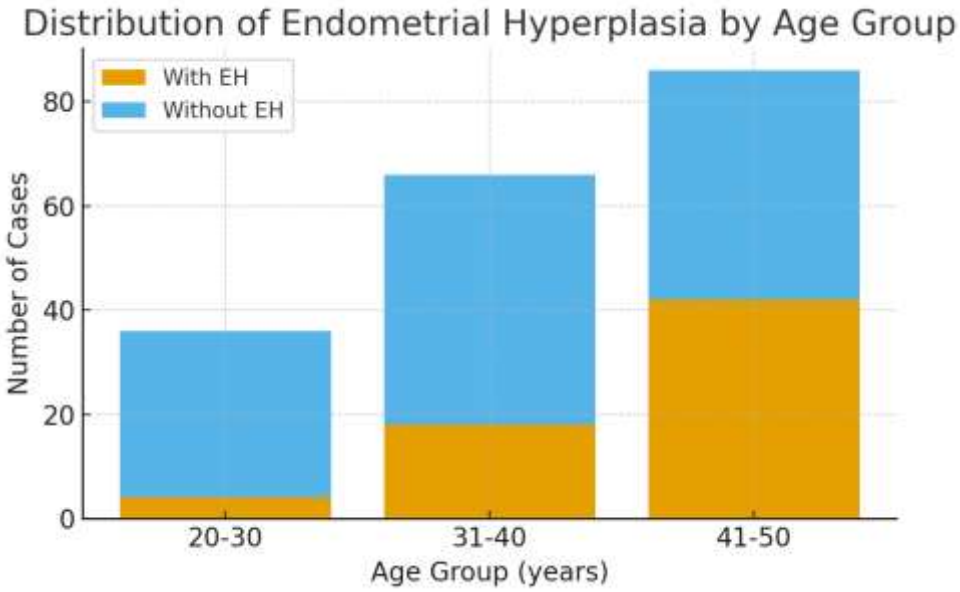


FIGURE:2

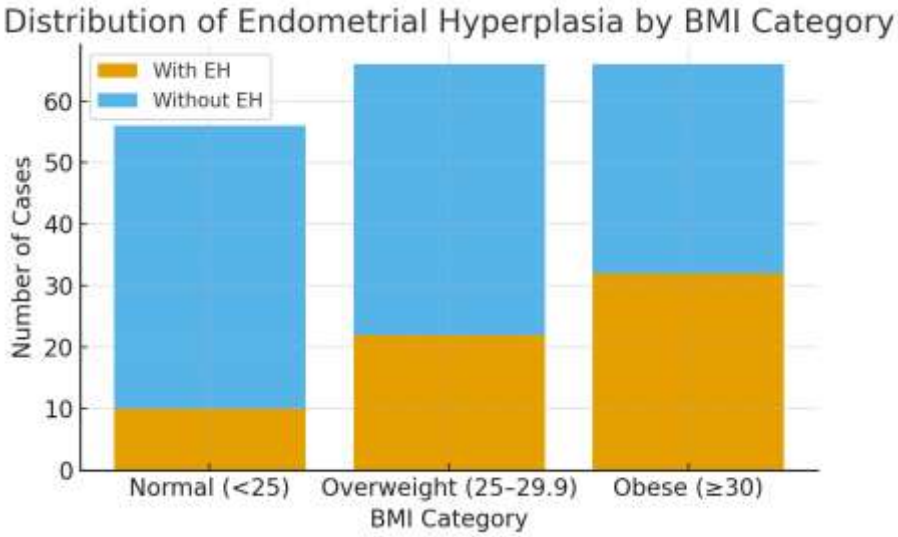


FIGURE:3

Volume 3, Issue 10, 2025

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

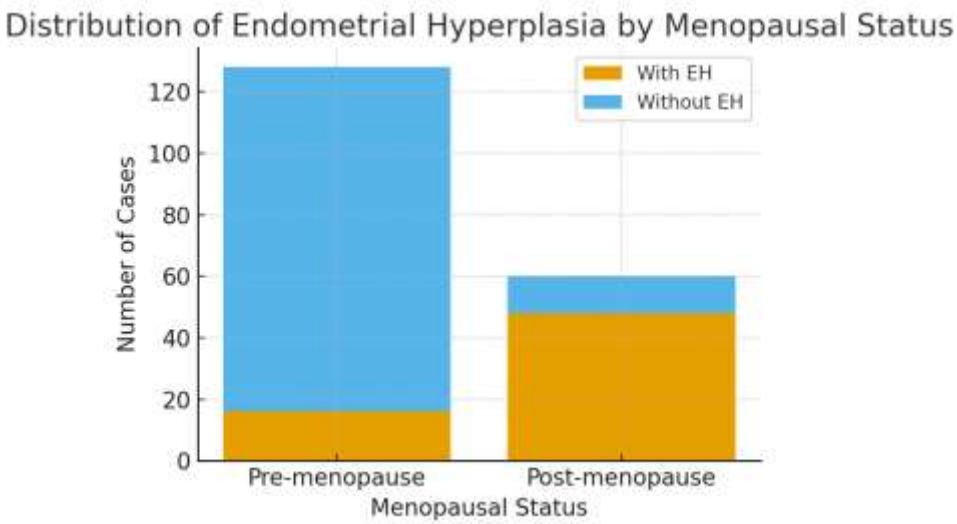


FIGURE:4

DISCUSSION

In this cross-sectional study of 188 women presenting with abnormal uterine bleeding (AUB), endometrial hyperplasia (EH) was diagnosed in 64 patients (34.0%). This prevalence is higher than several previously reported rates but is consistent with the wide variability in reported frequencies that reflects differences in study populations, case definitions, diagnostic methods and healthcare settings. Ayesha et al. reported a prevalence of 22.7% among women with AUB in a tertiary hospital in Pakistan, which is lower than the 34% observed in our series.[7] Other regional and institutional studies report EH prevalences ranging from single digits up to the mid-20s percent: some series from Pakistan and nearby regions have reported prevalences of ~12%–26% depending on age groups and histopathological criteria.[8,9] Larger systematic and narrative reviews emphasize that EH prevalence varies markedly by menopausal status, obesity and referral patterns, and that postmenopausal populations tend to have higher rates than reproductive-age cohorts.[10]

Several factors likely explain the higher frequency of EH in our cohort. First, our study included a substantial proportion of women in the 41–50 years age group and a sizeable postmenopausal subgroup (31.9%), both of which are associated with increased EH risk; in our data 65.6% of EH cases occurred in the 41–50 years group and 75% of EH cases were postmenopausal. This age and menopausal distribution likely shifts the observed prevalence upward compared with studies that include younger or predominantly reproductive-age women.[11,12] Second, obesity (BMI ≥30 kg/m²) was common and strongly associated with EH in our cohort; obese women comprised 50% of EH cases and obesity remained an independent predictor (adjusted OR 3.18). The link between obesity, unopposed estrogen action and endometrial proliferation is well described and has been repeatedly reported in recent studies and reviews [5,6]. Third, our diagnostic pathway used systematic TVS assessment of endometrial thickness with histopathologic confirmation as per operational definitions and sonography performed by experienced radiologists; differences in ultrasound technique, operator experience, endometrial thickness cutoffs and tissue sampling protocols across studies can produce substantial variation in EH detection rates.[13]

Our multivariable analysis identified postmenopausal status, obesity, age ≥40 years and symptom duration >6 months as independent predictors of EH, with postmenopausal status and obesity showing the strongest associations.

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

These findings concur with recent literature that consistently highlights postmenopausal status and adiposity as major risk factors for endometrial proliferative disease.[14] For example, contemporary reviews and cohort studies report increased odds of EH and endometrial neoplasia in obese and postmenopausal women, attributing the effect to increased peripheral aromatization of androgens to estrogens and chronic endometrial exposure to unopposed estrogen . The association with prolonged symptom duration (>6 months) may reflect delayed presentation or referral, allowing time for progressive endometrial proliferation; several studies have similarly reported higher rates of organic endometrial pathology among women with longer symptom duration.[15]

Compared to population-based or screening studies that sample asymptomatic women, AUB clinic cohorts (like ours) are enriched for symptomatic and higher-risk patients, which naturally elevates EH prevalence. This is important when comparing our 34% estimate with registry or pathology-database reports that include broader, less-selected population.[15] Additionally, variability in histopathological classification (simple vs complex hyperplasia, with/without atypia) and whether atypical hyperplasia is reported separately will alter prevalence figures; some series report combined and separate frequencies and thus are not strictly comparable unless definitions are harmonized .[15]

Strengths of our study include a clearly defined, consecutive sample of AUB patients, standardized TVS measurement by experienced radiologists blinded to clinical data, and multivariable analysis to identify independent predictors. These features increase internal validity and clinical relevance for tertiary care gynecology practice.

The study also has limitations. The cross-sectional design precludes assessment of temporal causality. Sampling was non-probability and single-center, which may limit generalizability to broader community settings. Although TVS and histopathology were used, we did not provide subgroup analysis by hyperplasia subtype (simple/complex, with/without atypia) in the primary results; such subclassification has prognostic importance and should be addressed in future analyses. Finally, potential referral bias and unmeasured confounders (e.g., HRT use, detailed metabolic comorbidity data, unopposed estrogen exposure, and tamoxifen history) could influence observed associations and should be incorporated in subsequent studies.

Clinically, the high prevalence of EH in our symptomatic cohort supports a low threshold for endometrial assessment in women with AUB who are obese, postmenopausal, aged ≥40, or have prolonged bleeding. Transvaginal sonography remains a useful, non-invasive triage tool to identify patients who require definitive endometrial sampling. Future prospective multicenter studies with standardized histopathological reporting and inclusion of metabolic and hormonal variables would refine risk stratification and guide targeted screening and preventive strategies.

STRENGTHS AND LIMITATIONS

This study provides valuable local data on the frequency of endometrial hyperplasia among women with abnormal uterine bleeding using standardized clinical and ultrasonographic criteria. However, as a single-center cross-sectional study with non-probability sampling, its findings cannot establish causality or be generalized to all populations. Reliance on sonographic rather than histopathological confirmation may also have introduced diagnostic bias.

CONCLUSION

In conclusion, endometrial hyperplasia was common (34%) among women presenting with AUB in our tertiary hospital cohort. Postmenopausal status and obesity were the strongest independent predictors, with older age and prolonged symptom duration also conferring increased risk. These findings underscore the need for timely endometrial evaluation particularly in high-risk groups to detect premalignant lesions and institute appropriate management.

Frontier in Medical & Health Research

ISSN: (e) 3007-1607 (p) 3007-1593

REFERENCES

Shrestha D, Aryal S, Tiwari A, Sharma R. Abnormal Uterine Bleeding among Women Visiting Gynecology Out- patient Department of a Tertiary Care Hospital: A Descriptive Cross- sectional Study. J Nepal Med Assoc. 2022;60(246):121-5.

Sur D, Chakravorty R. Correlation of Endometrial Thickness and His to pathology in Women with Abnormal Uterine Bleeding. Reprod Syst Sex Disord. 2016;5(4):1–3.

Deneris A. PALM-COEIN Nomenclature for Abnormal Uterine Bleeding. J Midwifery Womens Health. 2016;61(3):376–9.

Chapagain S, Dangal G. Clinical and histopathological presentation of abnormal uterine bleeding in perimenopausal women in tertiary center of Nepal. J Nepal Health Res Counc. 2020;18(2):248–52.

Kumari A, Pankaj S, Choudhary V, Kumari J, Nazneen S, Kumari A, et al. Ultrasonic and Histopathological Evaluation to Exclude Premalignant and Malignant Lesions in Perimenopausal and Postmenopausal Women Presenting as Abnormal Uterine Bleeding. J Obstet Gynaecol Ind. 2019;69(Suppl 2):171–6.

Park YR, Lee SW, Kim Y, Bae IY, Kim HK, Choe J, et al. Endometrial thickness cut-off value by transvaginal ultrasonography for screening of endometrial pathology in premenopausal and postmenopausal women. Obstet Gynecol Sci. 2019;62(6):445–53

ingh P, Dwivedi P, Mendiratta S. Correlation of Endometrial Thickness with the Histopathological Pattern of Endometrium in Postmenopausal Bleeding. J Obstet Gynaecol India. 2016;66(1):42–6.

Naeem A, Aslam A, Nissa AU, Rasheed T, Akhtar T, Naz Z. Determine the Frequency of Endometrial Hyperplasia in Female with Abnormal Vaginal Bleeding. Pak J Med Health Sci. 15 (7); 2021:1779-81.

Wang L, Wei W, Cai M. A review of the risk factors associated with endometrial hyperplasia during perimenopause. *Int J Womens Health.* 2024;16:1475-1482. doi:10.2147/IJWH.S95559 Dove Medical Press+2Dove Medical Press+2

Per-vez SN. A histopathological study of endometrial biopsy samples in abnormal uterine bleeding. *Cureus.* 2023;14(11):e31264. doi:10.7759/cureus.31264 rmj.org.pk

Upadhyay A, Tyagi M, Gupta S, Bansal R, Varma Y. Comparative study of hysteroscopy with ultrasonography and its correlation with histopathology in cases of abnormal uterine bleeding in perimenopausal women. *Int J Reprod Contracept Obstet Gynecol.* 2022;11(3):791-798. doi:10.18203/2320-1770.ijrcog20220558 Pakistan Armed Forces Medical Journal

Endometrial Hyperplasia as a Risk Factor of Endometrial Cancer." *European Journal of Obstetrics & Gynecology and Reproductive Biology.* 2022;275:129-135. doi:10.1016/j.ejogrb.2022.07.041 PubMed

Zhang X, Liang X, Chen Z. Endometrial atypical hyperplasia and risk of endometrial cancer. *Diagnostics (Basel).* 2024;14(22):2471. doi:10.3390/diagnostics14222471 MDPI

Zhang Y, Xu G, Yan C, Wang F, Yang M, Wang L. Telemedicine for pre-operative assessment, surgical appointments and pre-operative education in gynaecological day surgery: a prospective observational analysis. *Int J Womens Health.* 2024;16:1533-1540. doi:10.2147/IJWH.S15133 Dove Medical Press

"A risk prediction model for endometrial hyperplasia/endometrial cancer." *Scientific Reports.* 2024;14:122. doi:10.1038/s41598-024-83568-0