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FREQUENCY OF ENDOMETRIAL TISSUE PATTERN AMONG WOMEN WITH ABNORMAL UTERINE BLEEDING

Original Research

Raahima Nasim[1]*, Syeda Surayya Jabeen[1], Aeman Ameen[1], Faria Mumtaz[2]
[1]Combined Military Hospital, Kohat, Pakistan.
[2]Combined Military Hospital, Hyderabad, Pakistan.
Corresponding Author: Raahima Nasim, Combined Military Hospital, Kohat, Pakistan, raahima18@gmail.com
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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is one of the most frequently encountered gynecological complaints, especially in peri- and post-menopausal women. Accurate diagnosis of its underlying causes is crucial to guide appropriate management. While imaging and clinical evaluation provide initial direction, histopathological examination remains the gold standard for identifying endometrial abnormalities. In many local settings, particularly within resource-limited regions, data on endometrial histological patterns in AUB remains sparse. This study was designed to address this gap.

Objective: To evaluate the frequency of different histopathological patterns in endometrial tissue samples from women presenting with AUB in a tertiary care setting.

Methods: This cross-sectional study was conducted in the Department of Obstetrics and Gynaecology, CMH Kohat, from 5th February 2024 to 4th August 2024. A total of 203 women aged 40 to 80 years diagnosed with AUB were enrolled using non-probability consecutive sampling. Patients with pregnancy, bleeding diathesis, or intrauterine devices were excluded. Under general anesthesia, dilation and curettage were performed and endometrial tissue was obtained for histopathological analysis. Data on demographics and clinical parameters were recorded and analyzed using SPSS version 26. Frequencies, percentages, means, and standard deviations were computed; chi-square tests were applied for inferential analysis with a significance level set at $p \leq 0.05$.

Results: The mean age of participants was 55.07 ± 11.33 years; 112 (55.2%) were older than 60 years, and 113 (55.7%) were post-menopausal. The most common histopathological finding was endometrial hyperplasia in 67 patients (33.0%), followed by endometrial polyps in 48 (23.6%) and secretory/disordered proliferative endometrium in 55 (27.1%). Endometrial carcinoma and atrophic endometrium were each found in 40 cases (19.7%).

Conclusion: Endometrial hyperplasia was the predominant histopathological finding among women with AUB, while endometrial carcinoma, though less frequent, highlights the need for timely biopsy and diagnosis in post-menopausal bleeding.

Keywords: Abnormal Uterine Bleeding, Endometrial Carcinoma, Endometrial Hyperplasia, Endometrial Polyp, Histopathological Examination, Menopause, Uterine Hemorrhage.

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INTRODUCTION

Abnormal uterine bleeding (AUB) represents a frequent clinical concern among women of reproductive and peri-menopausal age, with its evaluation accounting for nearly one-third of gynecological consultations in tertiary care settings (1). While a normal menstrual cycle ranges from 21 to 35 days—with a median duration of 28 days—and typical menstrual bleeding lasting 3 to 4 days with a blood loss under 80 ml, any deviation from this pattern is categorized as abnormal (2). This includes alterations in the amount, frequency, or duration of menstrual flow, and notably, any uterine bleeding occurring after menopause is considered pathologic and warrants thorough investigation (3). The etiology of AUB may be idiopathic, as seen in dysfunctional uterine bleeding, or secondary to underlying physiological or structural abnormalities. Common causes include hormonal imbalances, endometrial polyps, uterine fibroids, endometriosis, and, in rare cases, malignancies. In cases where initial conservative investigations—such as serological evaluations and pelvic imaging—fail to reveal a definitive cause, histopathological assessment of endometrial tissue becomes essential (4). This is particularly important in women of peri-menopausal age and above, where the risk of premalignant or malignant changes increases, and early diagnosis can significantly alter patient outcomes (5).

Transvaginal ultrasonography remains a primary imaging modality due to its superior sensitivity and specificity for detecting uterine and adnexal abnormalities. However, in women with persistent AUB and inconclusive imaging findings, endometrial biopsy plays a pivotal role in excluding or confirming histological abnormalities such as hyperplasia, chronic endometritis, or carcinoma (6). Studies have reported a wide spectrum of histological findings in women with AUB (7-10). For instance, one analysis observed normal endometrial histology in 34.0% of cases, with polyps, chronic endometritis, and hyperplasia comprising a significant proportion of findings, while carcinoma was identified in 2.0% of cases (7). Another investigation noted higher rates of hyperplasia (25.0%) and malignancy (6.4%) among similar populations (8). Despite the global significance of this clinical issue, data regarding histological patterns of endometrial tissue in AUB patients remains limited in many local settings. The lack of context-specific evidence underscores the need for targeted research to inform diagnostic and therapeutic approaches tailored to regional healthcare dynamics. Therefore, this study was undertaken to evaluate the frequency and spectrum of endometrial histopathological patterns in women presenting with AUB. The findings aim to support the clinical utility of endometrial tissue assessment in guiding appropriate management and to contribute updated local statistics for informed gynecologic practice.

METHODS

A cross-sectional study was conducted to evaluate the histopathological patterns of endometrial tissue in women presenting with abnormal uterine bleeding (AUB). The study was carried out in the Department of Obstetrics and Gynaecology at CMH, Kohat, over a six-month period from 5th February 2024 to 4th August 2024. A total of 203 women, aged between 40 and 80 years, who presented with AUB were enrolled through non-probability consecutive sampling (2,3). Abnormal uterine bleeding was operationally defined as menstrual bleeding lasting more than seven days or an estimated blood loss exceeding 80 ml per cycle. Pregnant women, those diagnosed with bleeding diathesis, and individuals with intrauterine contraceptive devices were excluded to minimize confounding factors and ensure sample homogeneity. Sample size estimation was performed using the WHO sample size calculator. Prior to initiation, ethical clearance was obtained from the College of Physicians and Surgeons Pakistan (CPSP) and the Institutional Review Board (IRB) of CMH Kohat. Written informed consent was obtained from all participants after explaining the purpose and procedures of the study.

Baseline demographic and clinical data—including age, body mass index (BMI), menopausal status, level of education, occupation, residence, and socioeconomic status—were collected through structured proformas. All patients underwent cervical dilatation and endometrial curettage under general anesthesia. The obtained endometrial tissue was preserved and sent for histopathological analysis in accordance with standardized procedures. Histological evaluation focused on identifying patterns such as polyps, hyperplasia, carcinoma, chronic endometritis, atrophic endometrium, secretory endometrium, and disordered proliferative endometrium. Data analysis was conducted using IBM SPSS Statistics version 26. Continuous variables were expressed as means and standard deviations, while categorical variables, including histological patterns, were summarized as frequencies and percentages. Stratification was

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employed to control for potential effect modifiers. The chi-square test was used to assess associations between categorical variables, with a p-value of ≤0.05 considered statistically significant.

RESULTS

The study included 203 women presenting with abnormal uterine bleeding, with a mean age of 55.07 ± 11.33 years and a mean body mass index (BMI) of 23.92 ± 2.49 kg/m². The mean duration of disease was 7.21 ± 1.96 weeks. More than half of the participants (55.2%) were over 60 years of age, and a majority (55.7%) had a BMI of 24.0 kg/m² or below. Similarly, 55.7% of the women were post-menopausal. Regarding sociodemographic parameters, 73.4% of the participants belonged to urban areas, and 61.6% were educated. Housewives constituted 53.2% of the sample, while the remaining 46.8% were engaged in professional occupations. Socioeconomic stratification revealed that 68.0% of the women belonged to the poor category, while 32.0% were classified as having a fair socioeconomic status. Histopathological examination of endometrial tissue revealed a diverse range of findings. Endometrial hyperplasia was the most frequently observed pattern, present in 33.0% (n = 67) of cases. Secretory and disordered proliferative endometrium was identified in 27.1% (n = 55) of the samples. Endometrial polyps and chronic endometritis were each detected in 23.6% (n = 48) of patients. Atrophic endometrium and endometrial carcinoma were each found in 19.7% (n = 40) of the cases.

Stratified analysis revealed important trends in the distribution of endometrial histopathological findings across menopausal and age groups. Among post-menopausal women, endometrial hyperplasia and carcinoma were more frequent, observed in 45% and 30% of cases respectively, compared to 18% and 7% among pre-menopausal counterparts. Similarly, women aged above 60 years showed a higher prevalence of hyperplasia (41%) and carcinoma (28%) in comparison to those aged 60 or below, in whom the rates were 22% and 10%, respectively. Endometrial polyps and atrophic endometrium were also more commonly identified in older and post-menopausal patients. These findings underscore a distinct risk stratification by age and menopausal status, emphasizing the importance of targeted endometrial evaluation in high-risk subgroups.

Table 1: Means and standard deviation of patients according to baseline characteristics (n = 203)

Baseline characteristics	Mean ± SD
Age (years)	55.07±11.33
BMI (kg/m^2)	23.92±2.49
Disease duration (weeks)	7.207± 1.958

Table 2: Frequencies and percentages according to various parameters (n = 203)

Parameters	Subgroups	Frequency	Percent
Age (years)	60 or below	91	44.8
	More than 60	112	55.2
BMI (kg/m^2)	24.0 or below	113	55.7
	More than 24.0	90	44.3
Menopause status	Pre-menopause	90	44.3
	Post-menopause	113	55.7
Residence	Rural	54	26.6
	Urban	149	73.4
Education	Educated	125	61.6
	Uneducated	78	38.4
Profession	House wife	108	53.2
	Professional	95	46.8
Socioeconomic Status	Fair	65	32.0
	Poor	138	68.0

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Table 3: Frequencies and percentages according to endometrial pattern (n = 203)

Endometrial findings	Subgroups	Frequency	Percentage
Endometrial Polyp	Yes	48	23.6
	No	155	76.4
Atrophic endometrium	Yes	40	19.7
	No	163	80.3
Endometrial Hyperplasia	Yes	67	33.0
	No	136	67.0
Endometrial Carcinoma	Yes	40	19.7
	No	163	80.3
Chronic endometritis	Yes	48	23.6
	No	155	76.4
Secretory and disordered proliferative endometrium	Yes	55	27.1
	No	148	72.9

Table 4: Stratification of Endometrial Histopathological Findings by Clinical Parameters

Clinical Parameters	Endometrial Hyperplasia (%)	Endometrial Carcinoma (%)	Endometrial Polyp (%)	Atrophic Endometrium (%)
Post-menopause (n = 113)	45	30	26	28
Pre-menopause (n = 90)	18	7	21	9
Age > 60 years (n = 112)	41	28	25	27
Age ≤ 60 years (n = 91)	22	10	22	11

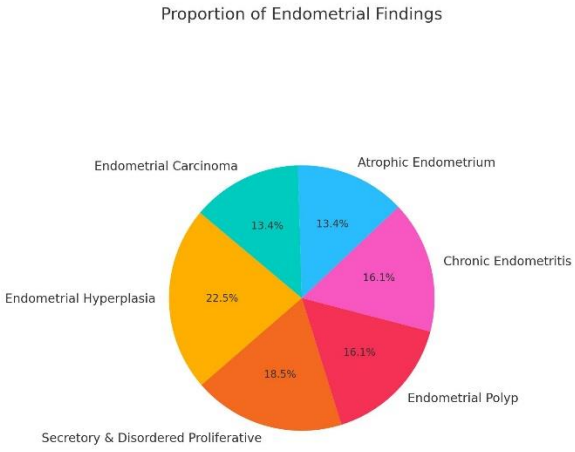


Figure 1 Proportion of Endometrial Findings

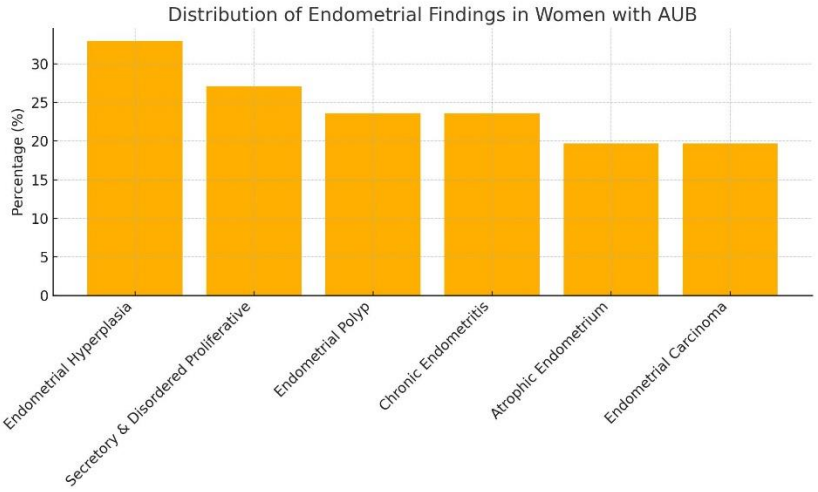


Figure 2 Distribution of Endometrial Findings in Women with AUB

DISCUSSION

The present study explored the histopathological spectrum of endometrial abnormalities in women presenting with abnormal uterine bleeding (AUB), with a particular focus on age-related and menopausal status-based distribution. The mean age of participants was 55.07 ± 11.33 years, with a significant proportion being above 60 years of age. This age trend differs from several earlier investigations, where the majority of participants were younger, typically between 31 and 50 years. The discrepancy likely stems from the inclusion criteria, as many previous studies included women as young as 20 years, while the current study focused solely on women aged 40 and

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above. Despite this variation, some contemporary studies have reported a similar age distribution pattern, reinforcing the clinical relevance of endometrial evaluation in older women (11–13). Endometrial hyperplasia emerged as the most prevalent histopathological finding, consistent with several recent studies that highlighted hyperplasia as either the primary or second most common endometrial lesion in AUB patients (14,15). Hyperplasia, particularly in post-menopausal women, is a clinically significant diagnosis due to its potential to progress to malignancy if left untreated. It typically results from prolonged estrogen exposure, which may be endogenous or exogenous in origin. Early detection and appropriate management of hyperplasia can significantly reduce the risk of malignant transformation, highlighting the utility of routine endometrial sampling in symptomatic women (16,17).

Endometrial polyps were observed in 23.6% of the cohort, making them the second most frequent finding in this study. This finding aligns with the histological trends reported in some studies, although considerable variability exists, with prevalence ranging from 2% to as high as 40% across different populations (18,19). Such variability is often attributed to differences in diagnostic modalities, genetic predisposition, hormonal status, and other demographic or clinical characteristics. Polyps are known to be benign but may contribute significantly to AUB due to their vascular structure, especially in peri- and post-menopausal women (20). Their multifactorial etiology—encompassing genetic, hormonal, and environmental influences—necessitates individualized assessment in clinical settings. Endometrial carcinoma was the least common histopathological diagnosis, recorded in 19.7% of the patients. This observation is in agreement with multiple previous studies reporting carcinoma as a less frequent yet critical cause of AUB (19,21). The prevalence of malignancy in AUB patients varies considerably across geographic and ethnic lines, underscoring the importance of contextual evaluation and tailored screening strategies. Despite its lower frequency, the potential severity of undetected carcinoma makes histological assessment a vital component of AUB management, particularly in older and post-menopausal women.

The study's strength lies in its focused inclusion of women aged 40 and above, which provides valuable insights into the endometrial pathology in a higher-risk age group often underrepresented in broader studies. Additionally, the use of stratified analysis by menopausal and age status adds depth to the findings and improves their clinical applicability. However, certain limitations should be acknowledged. The study employed a cross-sectional design, limiting causal inference. Furthermore, non-probability sampling may have introduced selection bias, potentially affecting the generalizability of results. Histopathological evaluations were not double-reviewed or blinded. Future studies should consider multi-center designs with larger and more diverse populations, inclusion of standardized diagnostic protocols, and exploration of molecular markers to enhance diagnostic precision and predictive modeling. In summary, the findings reaffirm the diagnostic value of endometrial sampling in women with AUB, especially among those above 40 years of age. The predominance of hyperplasia and its associated risks emphasize the need for timely and thorough evaluation. The study also highlights areas requiring further research, particularly in establishing population-specific diagnostic thresholds and guidelines for AUB management.

CONCLUSION

This study concluded that abnormal uterine bleeding in women aged 40 years and above is predominantly observed in post-menopausal individuals, with endometrial hyperplasia emerging as the most frequent histopathological finding. Endometrial polyps were also commonly identified, while malignancy, though least frequent, remains a critical concern requiring vigilant assessment. These findings highlight the essential role of endometrial tissue evaluation in the diagnostic workup of AUB, supporting its utility in early identification of potentially serious conditions and guiding timely clinical intervention, especially in higher-risk age groups.

AUTHOR CONTRIBUTION

Author	**Contribution**
Raahima Nasim*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Syeda Surayya Jabeen	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing

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Author	Contribution
	Has given Final Approval of the version to be published
Aeman Ameen	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Faria Mumtaz	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published

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