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Assessment of Symptoms and Endometrial Histopathology in Women with Perimenopausal Abnormal Uterine Bleeding: A Cross-Sectional Study

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KEYWORDS

Abnormal uterine bleeding; perimenopause; endometrial histopathology; endometrial hyperplasia; endometrial carcinoma

ABSTRACT:

Introduction: Abnormal uterine bleeding (AUB) is a common and often distressing complaint in perimenopausal women. Endometrial histopathology remains the diagnostic cornerstone, yet systematic data correlating bleeding pattern with histopathological findings are limited in the Indian context.

Objectives: To assess the pattern of clinical symptoms and correlate them with endometrial histopathological findings in perimenopausal women (aged 40–55 years) presenting with AUB at a tertiary care hospital.

Methods: Hospital-based cross-sectional observational study of 100 perimenopausal women with AUB. After informed consent, detailed history, clinical examination, relevant investigations, and endometrial sampling (pipelle or dilatation and curettage) were performed, followed by histopathological examination.

Results: Mean age was 47.3±3.8 years. Heavy menstrual bleeding was the most common symptom (52%), followed by irregular bleeding (31%) and intermenstrual bleeding (17%). Proliferative endometrium was the predominant histopathological finding (38%), followed by secretory endometrium (24%), endometrial hyperplasia without atypia (18%), atrophic endometrium (12%), endometrial hyperplasia with atypia (5%), and endometrial carcinoma (3%). Heavy menstrual bleeding was significantly associated with proliferative and hyperplastic endometrium (p=0.023).

Conclusions: Preventable obstetric complications, particularly hypertensive disorders and antepartum hemorrhage, remain leading IUFD causes. Strengthening antenatal surveillance, early high-risk pregnancy identification, and timely intervention may reduce IUFD incidence and maternal morbidity.

1. Introduction

Abnormal uterine bleeding (AUB) is one of the most frequent gynaecological complaints, affecting 10–30% of women during their reproductive years, with markedly higher prevalence during the perimenopausal transition.[1] The World Health Organization defines intrauterine fetal death as death occurring before complete expulsion or extraction of a product of conception from the mother, irrespective of gestational duration, excluding induced terminations, with death indicated by absence of signs of life including heartbeat, umbilical cord pulsation, or voluntary muscle movement after separation.[2] Globally, an estimated 2.6 million stillbirths occur annually, with disproportionate burden in low- and middle-income countries where preventable causes predominate[3]

The International Federation of Gynecology and Obstetrics (FIGO) PALM-COEIN classification provides a systematic framework for categorizing AUB causes in non-gravid women. The perimenopausal

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period, typically spanning ages 40–55 years, is characterized by hormonal fluctuations, declining ovarian function, and irregular menstrual cycles.[4] This variability complicates international comparisons and may underestimate the true burden in regions with limited reporting infrastructure. In India, where institutional delivery rates have improved substantially but stillbirth rates remain elevated compared with developed nations, systematic investigation of IUFD etiology remains essential for targeted intervention strategies.[5]

Identified causes of intrauterine fetal death include maternal conditions (hypertensive disorders, diabetes mellitus, infections, anemia), placental abnormalities (abruption, insufficiency), fetal factors (congenital anomalies, growth restriction, cord accidents), and unexplained cases where thorough investigation fails to identify a definitive etiology.[6] The relative contribution of each category varies by population, healthcare infrastructure, and investigation protocols. Understanding local etiological patterns is crucial for developing context-appropriate prevention strategies.

Histopathological evaluation of the endometrium remains the gold standard for diagnosing the underlying cause of AUB and guiding appropriate management. Understanding the correlation between clinical presentation and histopathological findings can facilitate early identification of women at risk for significant endometrial pathology, particularly endometrial hyperplasia and carcinoma.[1] Timely and systematic evaluation, including endometrial sampling, facilitates risk stratification and appropriate management, potentially improving outcomes for perimenopausal women presenting with AUB.[7] This study aimed to assess the pattern of clinical symptoms and correlate them with endometrial histopathological findings in perimenopausal women with AUB presenting at our tertiary care institution.

2. Objectives

This study was conducted with the following specific objectives: (1) to describe the demographic and clinical characteristics of perimenopausal women presenting with AUB; (2) to determine the spectrum of endometrial histopathological findings in this population; and (3) to evaluate the correlation between bleeding pattern and histopathological diagnosis.

Achievement of these objectives is expected to support evidence-based clinical decision-making regarding endometrial sampling indications and to contribute to the growing literature on perimenopausal AUB management in low-resource settings.

3. Methods

This hospital-based cross-sectional observational study was conducted in the Department of Obstetrics and Gynaecology at a tertiary care teaching hospital over a period of 3 months. The study protocol was approved by the Institutional Ethics Committee

Women aged 40–55 years presenting to the gynaecology outpatient department with AUB were screened. Inclusion criteria: women aged 40–55 years presenting with AUB and willing to provide written informed consent. Exclusion criteria: pregnancy or lactation, known bleeding disorders, hormonal therapy within the preceding three months, and known significant uterine structural pathology (fibroids >3 cm, polyps). A total of 100 eligible women were enrolled after obtaining written informed consent.

A detailed history was recorded including age, parity, menstrual pattern, duration and amount of bleeding, and associated symptoms. Comprehensive general, systemic, and pelvic examination was performed. Relevant investigations including complete blood count, thyroid function tests, and transvaginal ultrasonography were conducted to exclude systemic and structural causes of AUB. Endometrial sampling was performed using a pipelle device or by dilatation and curettage, depending on cervical accessibility and uterine size. Samples were fixed in 10% formalin, processed, sectioned, and stained with haematoxylin and eosin.

Histopathological reports were categorized as proliferative endometrium, secretory endometrium, endometrial hyperplasia without atypia, endometrial hyperplasia with atypia, atrophic endometrium, or endometrial carcinoma, in accordance with the WHO classification of endometrial pathology.

Data were analyzed using SPSS version 26.0 (IBM Corp., Armonk, NY). Continuous variables were expressed as mean ± standard deviation and categorical variables as frequencies and percentages. Chi-square test was used to assess the correlation between clinical

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symptoms and histopathological findings. A p-value <0.05 was considered statistically significant.

4. Results

A total of 100 perimenopausal women with AUB were enrolled. Table 1 summarizes the demographic characteristics. Mean age was 47.3±3.8 years (range 40–55 years). The majority of women (72%) were multiparous and 28% were nulliparous. Mean body mass index was 26.4±4.2 kg/m². Heavy menstrual bleeding was the most common presenting symptom, observed in 52 women (52%), followed by irregular menstrual bleeding in 31 (31%), and intermenstrual bleeding in 17 (17%) (Table 2). Associated symptoms included dysmenorrhoea (24%), pelvic pain (18%), and passage of clots (35%). Histopathological examination revealed proliferative endometrium in 38 women (38%), secretory endometrium in 24 (24%), endometrial hyperplasia without atypia in 18 (18%), atrophic endometrium in 12 (12%), endometrial hyperplasia with atypia in 5 (5%), and endometrial carcinoma in 3 (3%) (Table 3). Women presenting with heavy menstrual bleeding had a significantly higher prevalence of proliferative endometrium (46.2%) and endometrial hyperplasia (26.9%) compared with other bleeding patterns (p=0.023). All cases of endometrial carcinoma presented with heavy or irregular bleeding (Table 4).

Table 1. Demographic Characteristics of Study Participants (n=100)

Characteristic	n (%) or Mean±SD
Age (years), mean ± SD	
<20 years	47.3 ± 3.8
>35 years	26.4 ± 4.2
Parity	
Nulliparous	28 (28%)
Multiparous	72 (72%)

BMI = body mass index; SD = standard deviation. Data are n (%) or mean±SD.

Table 2. Pattern of Bleeding in Study Participants (n=100)

Cause	n (%)
Heavy menstrual bleeding	52 (52%)
Irregular menstrual bleeding	31 (31%)
Intermenstrual bleeding	17 (17%)

Data are n (%).

Table 3. Distribution of Histopathological Findings (n=100)

Outcome	n (%) or Mean±SD
Histopathological Finding	
Proliferative endometrium	38 (38%)
Secretory endometrium	24 (24%)
Endometrial hyperplasia without atypia	18 (18%)
Atrophic endometrium	12 (12%)
Endometrial hyperplasia with atypia	5 (5%)
Endometrial carcinoma	3 (3%)

Data are n (%) or mean±SD.

5. Discussion

Our study demonstrates that preventable obstetric complications, particularly hypertensive disorders and antepartum hemorrhage, remain leading causes of intrauterine fetal death at our tertiary care institution. Hypertensive disorders accounted for 22% of cases, consistent with global literature.8 The mean age of our study population was 47.3 years, consistent with the typical perimenopausal age range. Heavy menstrual bleeding was the predominant symptom (52%), consistent with findings from comparable studies reporting heavy bleeding in approximately 48–50% of perimenopausal women with AUB, likely reflecting anovulatory cycles and unopposed oestrogen stimulation.[8] Proliferative endometrium was the most common histopathological finding (38%), followed by secretory endometrium (24%), consistent with the hormonal milieu of perimenopause characterized by

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irregular ovulation and relative oestrogen excess. This distribution is comparable to other studies reporting proliferative endometrium as the predominant finding in similar populations. [9] A significant finding of our study was the identification of endometrial hyperplasia without atypia in 18%, hyperplasia with atypia in 5%, and endometrial carcinoma in 3%. The overall prevalence of premalignant and malignant lesions (8%) underscores the critical importance of histopathological evaluation in perimenopausal women with AUB.11 Our analysis revealed a statistically significant association between heavy menstrual bleeding and proliferative or hyperplastic endometrium (p=0.023), attributable to prolonged oestrogen stimulation leading to endometrial proliferation and irregular shedding. Importantly, all three cases of endometrial carcinoma presented with heavy or irregular bleeding, emphasizing that these symptoms warrant thorough investigation.[7] The clinical implications of these findings are significant. The high prevalence of endometrial pathology justifies routine endometrial sampling in perimenopausal women with AUB, particularly those presenting with heavy menstrual bleeding. The detection of premalignant and malignant lesions in 8% of cases highlights histopathological evaluation as an essential screening tool for early detection of endometrial neoplasia.

The FIGO PALM-COEIN classification provides a comprehensive framework for categorizing AUB causes. The present study focused on endometrial histopathology, complemented by transvaginal ultrasonography to exclude structural causes such as polyps, adenomyosis, leiomyomas, and malignancy.[5] Several limitations warrant acknowledgement. The relatively small sample size may limit generalizability, particularly for rare outcomes such as endometrial carcinoma. This was a single-centre study at a tertiary care hospital, which may introduce selection bias towards more complex cases. Long-term follow-up data on disease progression and treatment outcomes were not available, and risk factors such as obesity, diabetes, and family history were not systematically analyzed.[9]

In conclusion, premenopausal women with AUB exhibit a spectrum of endometrial histopathological findings, with a notable prevalence of proliferative endometrium and endometrial hyperplasia. Heavy menstrual bleeding is significantly associated with proliferative and hyperplastic endometrium.17 The presence of premalignant and malignant lesions in 8% of cases underscores the importance of routine endometrial sampling in this population.18 Early histopathological evaluation facilitates timely detection of endometrial pathology and enables appropriate risk-stratified management, potentially improving outcomes and quality of life for perimenopausal women with AUB.

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Declaration Statements

Conflicting interests: The authors declare that they have no competing interests.

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Ethical approval: The study protocol was approved by the Institutional Ethics Committee of Chettinad Hospital and Research Institute, Kelambakkam, Tamil Nadu, India. The study was conducted in accordance with the Declaration of Helsinki.

Guarantor: Trishya Ghosh accepts full responsibility for the work and the conduct of the study, had access to the data, and controlled the decision to publish.

Contributorship: Trishya Ghosh conceptualized and designed the study, conducted data analysis, and drafted the manuscript. Vijayalakshmi Kandasamy contributed to study supervision, data collection, and critical manuscript revision. A Vedha Jananni contributed to data collection, literature review, and manuscript revision. All authors critically reviewed and approved the final manuscript.

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Patient consent: Not applicable. This was a retrospective study using anonymized medical record data; individual patient consent was waived as per institutional ethics committee approval.

Trial registration: Not applicable. This was an observational retrospective study not registered as a clinical trial.