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Clinical Profile, Risk Factors, and Histopathological Patterns of Abnormal Uterine Bleeding in Perimenopausal Women: An Observational Study

Dr. Naveen Chandra S[1], Dr. Kaushalya M.K[2]

[1]*Associate Professor, Department of Obstetrics and Gynaecology, Chamarajanagar Institute of Medical Sciences, Chamarajanagar, Karnataka, India.*

[2]*Assistant Professor, Department of Obstetrics and Gynaecology, Chamarajanagar Institute of Medical Sciences, Chamarajanagar, Karnataka, India.*

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Corresponding Author:

Dr. Naveen Chandra S
Associate Professor, Department of Obstetrics and Gynaecology, Chamarajanagar Institute of Medical Sciences, Chamarajanagar, Karnataka, India.

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ABSTRACT

Background: Abnormal uterine bleeding is a common clinical problem during the perimenopausal transition and requires careful evaluation because benign, premalignant, and malignant endometrial lesions can present with similar bleeding patterns.

Objectives: To assess the clinical profile, risk factors, ultrasonographic findings, and histopathological patterns among perimenopausal women presenting with abnormal uterine bleeding.

Methods: This observational study included 100 perimenopausal women with abnormal uterine bleeding attending Chamarajanagar Institute of Medical Sciences, Chamaraja Nagar, Karnataka, India, from March 2024 to February 2025. Demographic data, clinical presentation, risk factors, hemoglobin status, ultrasonographic findings, and endometrial histopathology were recorded. Data were analysed using descriptive statistics.

Results: The mean age of participants was 46.8 +/- 4.3 years, and 46% belonged to the 45-49 years age group. Heavy menstrual bleeding was the commonest presentation, observed in 52% of women. Symptoms persisted for more than six months in 54%, and anemia was present in 64%. Overweight or obesity was noted in 66%, followed by hypertension in 28% and diabetes mellitus in 22%. Fibroid uterus was the most frequent ultrasonographic finding. Proliferative endometrium was the commonest histopathological pattern, followed by disordered proliferative and secretory endometrium. Endometrial hyperplasia and carcinoma together were observed in 18%.

Conclusion: Most perimenopausal women with abnormal uterine bleeding had benign endometrial patterns; however, a clinically important proportion showed premalignant or malignant pathology. Histopathological evaluation remains essential for risk stratification and timely management.

Keywords*: Abnormal uterine bleeding; Endometrial biopsy; Histopathology; Perimenopause; Endometrial hyperplasia; Endometrial carcinoma.*

INTRODUCTION

Abnormal uterine bleeding (AUB) is one of the most frequent reasons for gynecological consultation among women in the late reproductive and perimenopausal age groups. The term refers to bleeding from the uterine corpus that differs from normal menstruation in regularity, frequency, duration, or volume, after excluding pregnancy-related causes. Standardized terminology proposed by the International Federation of Gynecology and Obstetrics (FIGO) has improved uniformity in describing AUB and has helped clinicians classify the underlying causes in a structured manner [1-3].

The perimenopausal period is biologically vulnerable because ovarian follicular depletion produces irregular ovulation, altered progesterone exposure, and variable estrogenic stimulation of the endometrium. These endocrine shifts often

produce benign bleeding disturbances; however, the same clinical presentation also occurs in structural uterine lesions, endometrial hyperplasia, and carcinoma. The PALM-COEIN classification separates structural causes such as polyp, adenomyosis, leiomyoma, and malignancy or hyperplasia from non-structural causes such as coagulopathy, ovulatory dysfunction, endometrial disorders, iatrogenic causes, and entities not otherwise classified [2,3].

Clinical evaluation of perimenopausal AUB must therefore balance two priorities: avoiding unnecessary invasive intervention in benign conditions and detecting premalignant or malignant disease at an early stage. Heavy menstrual bleeding, prolonged bleeding, intermenstrual bleeding, and frequent bleeding can impair quality of life and contribute to anemia, fatigue, reduced work capacity, and psychosocial distress [4,5]. Risk factors such as obesity, diabetes mellitus, hypertension, chronic anovulation, tamoxifen exposure, and increased endometrial thickness further increase the need for systematic endometrial assessment [6].

Ultrasonography is a useful first-line imaging tool for identifying uterine and adnexal abnormalities, including fibroids, adenomyosis, endometrial polyps, bulky uterus, and increased endometrial thickness. However, imaging alone cannot reliably distinguish physiological endometrial patterns from premalignant or malignant histology. Endometrial sampling and histopathological examination remain central to diagnosis, especially in women aged 40 years and above or those with persistent symptoms and clinical risk factors [7-10].

The present study was conducted to evaluate perimenopausal women presenting with AUB at Chamarajanagar Institute of Medical Sciences, Chamaraja Nagar, Karnataka, India. The objectives were to describe the demographic and clinical profile, assess common risk factors, document ultrasonographic findings, and determine the histopathological spectrum of endometrial patterns in this population.

METHODOLOGY

Study design and setting

This hospital-based observational study was conducted in the Department of Obstetrics and Gynaecology at Chamarajanagar Institute of Medical Sciences, Chamaraja Nagar, Karnataka, India. The study period extended from March 2024 to February 2025. The study was designed to describe the clinical characteristics, risk factors, ultrasonographic findings, and histopathological patterns among perimenopausal women presenting with AUB.

Study population

A total of 100 perimenopausal women with AUB were included. Perimenopausal women were considered as those in the transitional age group approaching menopause with menstrual irregularity or altered bleeding pattern. Eligible participants were recruited from the gynecology outpatient department and inpatient services during the study period. Women presenting with heavy menstrual bleeding, frequent menstrual bleeding, prolonged menstrual bleeding, or intermenstrual bleeding were evaluated according to routine institutional protocol and categorized using accepted AUB terminology [1-3].

Inclusion and exclusion criteria

Women aged 40-55 years presenting with AUB and willing to undergo clinical evaluation, ultrasonography, and endometrial sampling were included. Women with pregnancy-related bleeding, bleeding due to cervical malignancy, known coagulation disorders, active pelvic inflammatory disease requiring acute treatment, incomplete clinical records, or inadequate endometrial tissue for histopathological interpretation were excluded from the analysis.

Clinical assessment and investigations

Detailed history was obtained regarding age, parity, socioeconomic status, menstrual pattern, duration of symptoms, associated medical disorders, drug exposure, and family history of gynecological malignancy. General physical examination, systemic examination, abdominal examination, and pelvic examination were performed. Body mass index was categorized as normal, overweight, or obese. Hemoglobin levels were recorded and anemia was classified as absent, mild, moderate, or severe according to routine clinical thresholds used in the department. Transabdominal or transvaginal ultrasonography was performed based on patient suitability to evaluate uterine size, fibroids, adenomyosis, endometrial polyp, adnexal pathology, and endometrial thickness.

Histopathological evaluation

Endometrial tissue was obtained by endometrial biopsy or dilatation and curettage depending on clinical indication. Specimens were fixed in formalin, processed by standard histopathological techniques, embedded in paraffin, sectioned, stained with hematoxylin and eosin, and examined by a pathologist. Histopathological patterns were reported as proliferative endometrium, secretory endometrium, disordered proliferative endometrium, endometrial hyperplasia without atypia, endometrial hyperplasia with atypia, endometrial polyp, chronic endometritis, atrophic endometrium, or endometrial carcinoma. Histopathology was considered the final diagnostic reference for endometrial patterns [8-13].

Statistical analysis

Data were entered into a spreadsheet and analysed using descriptive statistics. Continuous variables were expressed as mean and standard deviation. Categorical variables were summarized as frequencies and percentages. Since the purpose of the study was descriptive, no inferential statistical testing was applied. The results were presented in tables with accompanying narrative interpretation.

Ethical considerations

The study was conducted in accordance with ethical principles for biomedical research involving human participants. Written informed consent was obtained before endometrial sampling and data collection. Confidentiality was maintained by anonymizing patient identifiers during analysis. Institutional Ethics Committee approval details should be inserted by the authors before journal submission.

RESULTS

A total of 100 perimenopausal women with abnormal uterine bleeding were included in the study. The mean age of the participants was 46.8 +/- 4.3 years. Most women belonged to the 45-49 years age group. Multiparity was common, and 66% of women were either overweight or obese (Table 1).

Table 1. Baseline demographic and clinical profile of women with abnormal uterine bleeding

Variable	Number of women	Percentage
Age group		
40-44 years	26	26.0%
45-49 years	46	46.0%
50-55 years	28	28.0%
Parity		
Nulliparous	4	4.0%
Para 1	16	16.0%
Para 2	38	38.0%
Para >=3	42	42.0%
BMI category		
Normal BMI	34	34.0%
Overweight	41	41.0%
Obese	25	25.0%
Socioeconomic status		
Lower	31	31.0%
Lower middle	47	47.0%
Upper middle	22	22.0%

Heavy menstrual bleeding was the most common clinical presentation, observed in 52% of women. The duration of symptoms was more than six months in 54% of participants. Anemia was present in 64% of women, with mild anemia being the most frequent category (Table 2).

Table 2. Clinical presentation, duration of symptoms, and hemoglobin status

Variable	Number of women	Percentage
Pattern of abnormal uterine bleeding		
Heavy menstrual bleeding	52	52.0%
Frequent menstrual bleeding	20	20.0%
Intermenstrual bleeding	14	14.0%
Prolonged menstrual bleeding	14	14.0%
Duration of symptoms		
<3 months	18	18.0%
3-6 months	28	28.0%
7-12 months	36	36.0%
>12 months	18	18.0%
Hemoglobin status		
No anemia	36	36.0%
Mild anemia	32	32.0%
Moderate anemia	26	26.0%
Severe anemia	6	6.0%

Among the risk factors evaluated, overweight or obesity was the most frequent, followed by hypertension and diabetes mellitus. On ultrasonography, fibroid uterus was the commonest abnormality, seen in 28% of women, followed by adenomyosis in 18%. Increased endometrial thickness was documented in 30% of cases (Table 3).

Table 3. Risk factors and ultrasonographic findings

Variable	Number of women	Percentage
Risk factors*		
Overweight/obesity	66	66.0%
Hypertension	28	28.0%
Diabetes mellitus	22	22.0%
Thyroid dysfunction	14	14.0%
Chronic anovulatory cycles	18	18.0%
Family history of gynecological malignancy	5	5.0%
Tamoxifen exposure	2	2.0%
Ultrasonographic findings		
Normal uterus and adnexa	22	22.0%
Fibroid uterus	28	28.0%
Adenomyosis	18	18.0%
Endometrial polyp	10	10.0%
Bulky uterus without focal lesion	16	16.0%
Ovarian cyst/adnexal pathology	6	6.0%
Increased endometrial thickness	30	30.0%

*Multiple risk factors were present in some women; therefore, percentages do not add up to 100%.

Histopathological examination showed that proliferative endometrium was the most common pattern, observed in 28% of women. Disordered proliferative endometrium was noted in 18%, while secretory endometrium was seen in 16%. Endometrial hyperplasia without atypia was found in 12%, hyperplasia with atypia in 3%, and endometrial carcinoma in 3% of women (Table 4).

Table 4. Histopathological patterns of endometrium

Histopathological pattern	Number of women	Percentage
Proliferative endometrium	28	28.0%
Secretory endometrium	16	16.0%
Disordered proliferative endometrium	18	18.0%
Endometrial hyperplasia without atypia	12	12.0%
Endometrial hyperplasia with atypia	3	3.0%
Endometrial polyp	10	10.0%
Chronic endometritis	6	6.0%
Atrophic endometrium	4	4.0%
Endometrial carcinoma	3	3.0%
Total	100	100.0%

Overall, benign endometrial patterns constituted the majority of histopathological findings. However, premalignant and malignant lesions were observed in 18% of women, highlighting the importance of histopathological evaluation in perimenopausal women presenting with abnormal uterine bleeding.

DISCUSSION

The present observational study assessed the clinical profile, risk factors, ultrasonographic findings, and histopathological patterns among 100 perimenopausal women with AUB. The mean age was 46.8 years, and the largest proportion of women belonged to the 45-49 years age group. This age distribution is consistent with the expected clustering of AUB during the menopausal transition, when ovulatory dysfunction and variable estrogen-progesterone exposure alter endometrial stability [1,4]. Similar age clustering has been reported in studies evaluating perimenopausal AUB and endometrial histopathology [7,9,11].

Heavy menstrual bleeding was the most common presentation in this study, affecting 52% of women. This finding agrees with previous reports where menorrhagia or heavy menstrual bleeding formed a major clinical complaint among perimenopausal women undergoing endometrial evaluation [7-10]. The clinical importance of heavy menstrual bleeding is reinforced by the high anemia burden in the present study. Anemia was present in 64% of women, indicating that AUB during the perimenopausal period is not only a diagnostic concern but also a contributor to functional limitation and reduced health-related quality of life [4,5].

Overweight or obesity was the most frequent risk factor, followed by hypertension and diabetes mellitus. These metabolic factors are clinically relevant because adiposity promotes peripheral aromatization of androgens into estrogens, increasing the possibility of unopposed estrogenic stimulation of the endometrium. Diabetes and hypertension commonly cluster with obesity and have been associated with endometrial abnormalities in women with AUB [6,14]. In this study, 18% of women had chronic anovulatory cycles, which further supports the role of hormonal imbalance in perimenopausal bleeding.

Ultrasonography identified fibroid uterus as the commonest structural abnormality, followed by adenomyosis, bulky uterus, and endometrial polyp. These findings fit within the structural PALM components of the FIGO classification [2,3]. Talukdar and Mahela also highlighted the usefulness of correlating sonographic findings with histopathological findings in perimenopausal AUB [7]. Nevertheless, ultrasonography cannot replace histopathology, particularly when increased endometrial thickness or risk factors for hyperplasia are present.

Histopathological examination showed proliferative endometrium as the most common pattern, followed by disordered proliferative and secretory endometrium. These findings are comparable with earlier studies in which proliferative, secretory, and disordered proliferative patterns were frequently observed among women with AUB [8-12]. Endometrial hyperplasia without atypia was observed in 12%, hyperplasia with atypia in 3%, and carcinoma in 3%. Although most cases were benign, the combined 18% burden of premalignant and malignant lesions is clinically important. This supports the continued use of endometrial sampling in perimenopausal women with persistent AUB, especially in the presence of obesity, diabetes, hypertension, chronic anovulation, or increased endometrial thickness [6,13,14].

Limitations

The study was limited by its single-centre design, descriptive analysis, and sample size of 100 women. Follow-up outcomes after medical or surgical management were not assessed. Risk factor analysis was based on frequency distribution rather than adjusted statistical modelling. Hysteroscopic correlation was not available for all women, limiting precise evaluation of focal intrauterine lesions.

CONCLUSION

This observational study concludes that abnormal uterine bleeding in perimenopausal women is most commonly seen in the 45-49 years age group and frequently presents as heavy menstrual bleeding with anemia. Overweight or obesity, hypertension, diabetes mellitus, and chronic anovulatory cycles were common associated risk factors. Fibroid uterus and adenomyosis were the major ultrasonographic abnormalities. Histopathology revealed predominantly benign endometrial patterns, especially proliferative and disordered proliferative endometrium. However, endometrial hyperplasia and carcinoma were identified in a clinically meaningful proportion of women. These findings emphasize the value of endometrial sampling for accurate diagnosis and timely management of perimenopausal AUB.

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