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# Histopathological Evaluation of Abnormal Uterine Bleeding in Women of Reproductive and Perimenopausal Age Groups

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## Abstract

***Background & Aims*:** Abnormal uterine bleeding (AUB) occurs in up to 30% of the women and is a major cause of hysterectomies. It can result from a broad spectrum of conditions ranging from physiological process to malignant lesions involving organic, systemic, and hormonal responses. The PALM component of the FIGO classification system (PALM-COEIN) deals with the structural causes, while the COEIN component deals with the non-structural causes. AUB is diagnosed by clinical examination and ultrasonography. Final diagnosis is always correlated with histopathological study. The objective of this study was clinico-histopathological evaluation of the cases of AUB, with respect to FIGO classification system in the women of reproductive and perimenopausal age group.

***Materials & Methods*:** Present study was a hospital-based prospective observational study conducted in the Department of Obstetrics and Gynecology of Sher-i-Kashmir Institute of Medical Sciences, Srinagar, India. It included 100 women, with complains of abnormal uterine bleeding, in the age group of 30 to 50 years and above, who were evaluated in over a period of one year, from January 2021 to December 2021. Age, parity, menstrual cycles, duration of symptoms and recurrence (if any), contraception, obstetric history, and history suggestive of Pelvic inflammatory disease (PID) were noted. General physical, systemic, and gynecological examinations of the patients were done. The findings of blood investigations, sonography, histopathology of endometrial biopsy specimens, and hysterectomised specimens were analysed.

***Results*:** In our study, the maximum incidence of AUB was seen in reproductive and perimenopausal age groups between 35-40 years (38%) and 40-45 years (35%). The highest incidence of AUB was in multiparous women (44%). The most common pattern of AUB was heavy menstrual bleeding (menorrhagia) (69%). The most common type of AUB was chronic type of heavy menstrual bleeding (65%). In our study, the most common organic causes of AUB were fibroids (34%) and adenomyosis (18%). On histopathology, secretory endometrium was found in 52% cases and proliferative type in 21% of cases.

***Conclusion*:** Ultrasonography combined with endometrial biopsy proves to be the gold standard for diagnosis of AUB. The present study highlights the importance of endometrial biopsy and its interpretation which plays a pivotal role in the management of AUB.

***Keywords*:** Abnormal Uterine Bleeding, Perimenopausal, PALM COEIN, Histopathology, Ultrasonography

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## Introduction

Uterus, the epitome of womanhood, is influenced by cyclical hormonal changes under the influence of changes in the hypothalamus-pituitary-ovarian axis. Abnormal uterine bleeding is a common indication for medical visits among women of reproductive age and heavy menstrual bleeding affects up to 30% of women throughout their reproductive lifetime. AUB leads to almost two thirds of all hysterectomies done across the world and is hence a leading cause of morbidity and mortality. The prevalence of AUB in gynecology outpatient department (OPD) is about 10-15%, with an incidence of 17.9% in India (1).

Abnormal uterine bleeding during reproductive age can result from a broad spectrum of conditions ranging from physiological processes to malignant lesions involving organic, systemic, and hormonal responses. Abnormal uterine bleeding is the most common complaint encountered in perimenopausal age group causing significant physical & mental morbidity and financial burden on these patients. Abnormal uterine bleeding is responsible for more than one third of gynecological consultations and nearly two thirds of hysterectomies (1). AUB may be due to fibromyoma, adenomyosis, endometrial polyps, ovarian tumour, pelvic inflammatory disease (PID), endometrial hyperplasia, endometrial carcinoma, hormonal imbalance (like hypothyroidism) and hypothalamic-pituitary diseases. In a large number of the patients, AUB occurs without any systemic causes or any organic lesions of the genital tract and for this, the term dysfunctional uterine bleeding was used (2). In the FIGO (International Federation of Gynecology & Obstetrics) classification system (PALM-COEIN), the PALM (Poly, Adnomyosis, Leiomyoma, Malignancy) component of the classification deals with the structural causes, while the COEIN (Coagulopathy, Ovulatory dysfunction, Endometrial, Iatrogenic, not classified) component deals with the nonstructural causes (1, 3).

The management of AUB is done by clinical examination, accordingly investigated and confirmed by ultrasonography, but there may be discrepancy in clinical, sonological, and histopathological diagnosis. Final diagnosis is always correlated with histopathological study. The treatment for AUB includes both medical therapies and surgical procedures (4, 5). Surgical options include Hysteroscopic polypectomy, Endometrial ablation, Myomectomy, and Hysterectomy. Hysterectomy is one of the most commonly performed surgeries in the world, AUB being a fairly common indication (4, 6).

The pipelle endometrial biopsy method has been used for the evaluation of AUB since a long time. It does not require general anesthesia or hospitalization, and is performed as an outpatient procedure (7).

The objective of this study was clinico-histopathologically evaluation of the cases of AUB, with respect to PALM COEIN classification in the women of reproductive and perimenopausal age group.

## Materials & Methods

The present study was a hospital-based prospective observational one which conducted in the Department of Obstetrics and Gynecology of Sher-i-Kashmir Institute of Medical Sciences, Srinagar, India. It included 100 women, with complains of abnormal uterine bleeding, in the age group of 30 to 50 years or above, who were evaluated in our hospital over a period of one year, from January 2021 to December 2021. The history of the patients was noted with regard to their age, parity, menstrual cycles, duration of symptoms and recurrence (if any), contraception, obstetric history, and history suggestive of PID. After taking informed consent, a thorough general physical, systemic, and gynecological examinations of the patients were done. The findings of blood investigations, sonography, histopathology of endometrial biopsy specimens, and hysterectomised specimens were analysed.

Before starting the workup, pregnancy was excluded using urine beta HCG. After this, the structural etiologies of the PALM group were excluded using transabdominal or transvaginal ultrasound (USG). Endometrial biopsy was done in the patients above 40 years as well as those with high-risk factors for endometrial carcinoma such as nulliparity, polycystic ovarian disease (PCOD), diabetes, obesity, family





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history of endometrial cancer, and when medical management failed to stop bleeding. After the structural causes were excluded, the nonstructural origin of AUB was suspected, which includes the following etiologies: due to coagulopathy (AUB-C), ovulatory disorder (AUB-O), primary endometrial pathology (AUB-E), iatrogenic causes (AUB-I), and causes of AUB not yet identified (AUB-N).

## Results

In our study, the maximum incidence of AUB was seen in reproductive and perimenopausal age groups between 35-40 years (38%) and 40-45 years (35%).

This was followed by 15% of the patients in the age group of 45- 50 years, 8% in 30-35 years, and 2% in > 50 years (Table 1).

**Table 1.** Incidence of AUB in reproductive and perimenopausal

| Age | Incidence of AUB (%age) |
|---|---|
| 30-35 | 8 |
| 35-40 | 40 |
| 40-45 | 35 |
| 45-50 | 15 |
| >50 | 2 |

In our study, we observed the correlation of parity of women with the incidence of AUB. the incidence of AUB was 44% in multiparous and 19% in grand multipara females. The incidence falls to 31% in primipara and 6% in nulliparous females (Table 2).

**Table 2.** Correlation of parity of women with the incidence of AUB

| Parity | Incidence of AUB (%age) |
|---|---|
| Nulliparous | 6 |
| Primiparous | 31 |
| Multiparous | 44 |
| Grandmultiparous | 19 |

Among various patterns of AUB, heavy menstrual bleeding (menorrhagia) was most commonly seen (69%), followed by frequent menstruation (polymenorrhea 9%), and frequent & heavy menstruation (polymenorrhagia 14%). Less common patterns observed were irregular menstruation (metrorrhagia & menometrorrhagia) (5%) and infrequent menstruation (3%) (Table 3).

**Table 3.** Various patterns of AUB

| Patterns of AUB | Incidence (%age) |
|---|---|
| Heavy Menstrual bleeding | 69 |
| Frequent Menstruation | 9 |
| Frequent & Heavy Menstruation | 14 |
| Infrequent Menstruation | 3 |
| Irregular Menstruation | 5 |





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In the present study, it was observed that chronic type of heavy menstrual bleeding was the most common type of AUB (65%). Acute type of AUB was seen in 17% of cases, while acute-on-chronic type constituted 14% of cases. Cases of AUB in postmenopausal age group were 4% (Table 4).

**Table 4.** Types of AUB

| Types of AUB | Incidence (%age) |
|---|---|
| Acute | 17 |
| Chronic | 65 |
| Acute-on-chronic | 14 |
| Post-menopausal | 4 |

In our study, we observed that the most common organic causes of AUB were fibroids (34%) and adenomyosis (18%). Endometrial polyps (3%), endometrial hyperplasia (4%), and ovarian cysts (1%) were among the other detectable pathologies in the patients of AUB. A normal pelvic ultrasound was observed in 40% of cases (Table 5).

**Table 5.** Causes of AUB

| Causes of AUB | Incidence (%age) |
|---|---|
| Fibroids | 34 |
| Adenomyosis | 18 |
| Endometrial polyp | 3 |
| Endometrial hyperplasia | 4 |
| Ovarian cyst | 1 |
| Normal Scan | 40 |

In our study on histopathology, secretory endometrium was found in 52% cases, proliferative type in 21%, disordered proliferation in 7%, mixed pattern in 11%, and endometritis in 2% of cases of AUB. Endometrial hyperplasia was seen in 5% of cases, atrophic endometritis in 1%, and endometrial malignancy in 1% of cases (Table 6).

**Table 6.** Histopathological Patters of AUB

| Histopathological Patters of AUB | Incidence (%age) |
|---|---|
| Secretory | 52 |
| Proliferative | 21 |
| Disordered Proliferative | 7 |
| Mixed Pattern | 11 |
| Endometritis | 2 |
| Endometrial Hyperplasia | 5 |
| Atrophic endometritis | 1 |
| Endometrial Malignancy | 1 |





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## Discussion

Abnormal uterine bleeding (AUB) is defined as any bleeding of uterine origin which does not fulfill the criteria of normal duration, volume, regularity, or frequency. It has various patterns and a multifactorial etiology which can be structural or non-structural in their nature (1). AUB is one of the most frequently encountered complaints in gynecological practice (8).

AUB leads to loss of productivity and severely affects the quality of life that may result in surgical interventions. AUB is reported to occur in 9 to 14% of the women between menarche and menopause. The prevalence varies in each country. In India, the reported prevalence of AUB is around 17.9% (9).

The International Federation of Gynecology and Obstetrics (FIGO) Menstrual Disorders Working Group has proposed to abandon the use of term dysfunctional uterine bleeding (DUB) for the terms abnormal uterine bleeding (AUB) and heavy menstrual bleeding (HMB). HMB includes menometrorrhagia (excessive uterine bleeding during menstrual periods and at irregular intervals), metrorrhagia (bleeding at irregular intervals), and polymenorrhoea (more frequent periods). HMB is defined as "excessive menstrual blood loss which interferes with the woman's physical, emotional, social and material quality of life, which can occur alone or in combination with other symptoms.

In this study, we observed the histopatholigical findings in the cases of AUB in perimenopausal women reported to our hospital. In the present study, the maximum incidence of AUB was seen in the women between 35-40 years (40%) and 40-45 years (35%). This was followed by 15% in the age group of 45- 50 years, 8% in 30-35 years, and 2% in > 50 years. Our observations were similar to the studies of Jha et al. and Semnani et al. (1, 10).

AUB has a direct correlation with the parity status of the patients. We observed highest incidence of AUB in multiparous females (44%), followed by 31% in primiparous. Lower incidence was found in grandmultiparous (19%) and nulliparous women (6%). Similar incidences of parity were seen in the studies of Jha et al. and Mehrotra et al. (1, 11).

In our study, heavy menopausal bleeding (HMB) was the most common type of AUB (69%) as it is associated with most of the structural as well as non-structural causes of AUB. Frequent menstruation (9%) and frequent with heavy menstruation (14%) were types of ovular bleeding due to hyperstimulation of follicular growth by FSH, resulting in shortening of the follicular phase. Irregular (5%) and infrequent (3%) menstruation have specific etiologies. The causes of infrequent menstruation in our study were mainly endocrinal such as thyroid dysfunction and hyperprolactinemia. Our findings were similar to the study of Jha et al. (1).

In the present study, it was observed that chronic type of heavy menstrual bleeding was the most common type of AUB (65%). Acute type of AUB was seen in 17% of the cases. Endometrial polyps and coagulopathies, causes of acute on chronic AUB, were seen in 14% of the cases. Cases of AUB in postmenopausal age group were 4%. Our findings were similar to the study of Jha et al. (1).

In our study, we observed that the most common organic causes of AUB were fibroids (34%) and adenomyosis (18%). Our findings were similar to the study of Jha et al. and Sweet et al. (1, 12).

In our study, secretory (52%) and proliferative (21%) endometrium were the most common histopathological findings followed by disordered proliferative in 7% and mixed pattern in 11% of the cases. Our findings were similar to the findings of Jha et al. (1). Katke et al. showed proliferative endometrium in 46.9% cases, hyperplastic in 6%, irregular shedding in 1.5%, and atrophic in 1.6% of the cases of AUB in perimenopausal women (13). Kumar et al., showed proliferative endometrium in 36%, secretory in 24%, hyperplastic in 16%, and atrophic in 14% of the cases (14).

## Conclusions

Ultrasonography combined with endometrial biopsy proves to be the gold standard for diagnosis of AUB. In our study we came to the following inferences and present them as clinical pearls for practice.





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1. AUB is an entity which encompasses a wide spectrum of symptoms and presentations, taking into consideration various factors. Every case of AUB has its own characteristic findings on USG, endometrial biopsy and histopathology; hence a generalized or a single modality of treatment cannot be applicable for every patient.
2. With regards to diagnosis of AUB, pelvic ultrasound is the least invasive procedure used for visualization of the structure of the uterus and for visualization of the thickness of endometrium.
3. Endometrial sampling could be effectively used as the first diagnostic step in abnormal uterine bleeding although. It is a simple, cost-effective, and appropriate method that provides accurate diagnostic yield.
4. The present study highlights the importance of endometrial biopsy and its interpretation which plays a pivotal role in the management of AUB.

**Limitations of Study**

A greater sample size would aid in more clinical data to validate inferences.

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**Conflict of interest**

All authors report no conflicts of interest relevant to this article.

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**Data availability**

The raw data supporting the conclusions of this article are available from the authors upon reasonable request.

**Ethical statement**

The study adhered to ethical guidelines, and obtained informed consent from participants or waived it in accordance with ethical standards. Confidentiality and anonymity were maintained throughout the study, and the data were analyzed while protecting the rights and privacy of the participants.

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