

# HISTOPATHOLOGICAL PATTERN OF ENDOMETRIUM IN ABNORMAL UTERINE BLEEDING IN PRE-MENOPAUSAL AGE GROUP - A RURAL BASED TERTIARY CARE CENTRE STUDY

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## Abstract

**Introduction:** Abnormal Uterine Bleeding (AUB) is a prevalent clinical issue among premenopausal women, characterized by a range of etiological factors from inflammatory and benign to malignant lesions affecting the endometrium. Microscopic examination of the endometrium plays a crucial role in identifying these diverse pathologies in cases of AUB. **Objectives:** 1. To explore the spectrum of endometrial lesions concerning age groups among premenopausal women. 2. To establish a histopathological analysis of endometrial samples collected from premenopausal women presenting with AUB. **Materials and Methods:** A cross sectional study was conducted from July 2020 to June 2021, involving 100 female patients aged between 40 and 50 years, presenting with AUB. Endometrial samples were obtained through biopsy, dilation and curettage (D&C) and hysterectomy. **Results:** The highest incidence of AUB in premenopausal women was observed in the 46-48 years age group (36%). Histopathological analysis revealed a significant correlation between endometrial lesions and age. The most common endometrial pattern was proliferative (56%) in the 46-48 years age group, followed by the secretory pattern (31%) and atrophic endometrium (8%) was predominant in the same age group, while polyps (2%) were more prevalent in the 43-45 years age group. Endometrial adenocarcinoma was notably higher in the 43-45 years age group (7%). Overall, the proliferative pattern was the most frequent among premenopausal women with AUB (56%). **Conclusion:** This study highlights the range of physiological and pathological changes in the endometrium among premenopausal women with AUB. Besides normal physiological variations, benign and malignant conditions were also observed, emphasizing the need for careful evaluation of AUB symptoms. The correlation between bleeding presentations and endometrial lesions underscores the importance of microscopic analysis in diagnosing AUB in premenopausal women. Future research should focus on refining diagnostic approaches and improving management strategies for AUB based on histopathological findings.

**Keywords:** AUB, Endometrial Histopathology, Premenopausal Women.

## INTRODUCTION

Abnormal uterine bleeding (AUB) is the most common health issue seen in women of all age groups. AUB is defined as any bleeding pattern that differs in frequency, duration, and amount from a pattern observed during normal menstrual cycles or menopause. Bleeding is said to be abnormal when the pattern is irregular, of abnormal duration (seven days), or of abnormal amount (>80 ml/menses). AUB is the major gynaecological problem responsible for as many as one-third of all outpatient gynaecological visits. It has varied presentations like heavy menstrual bleeding (HMB),

frequent cycles, irregular cycles, post-coital bleeding, or post-menopausal bleeding (PMB). It affects women of every age group from adolescence to menopause. It reflects the underlying pathology as simple as hormonal imbalance or carcinoma requiring aggressive treatment. AUB has a significant effect on the quality of life of women<sup>1</sup>.

AUB is due to several factors deranging homeostasis like hormonal imbalances, infections, structural lesions, and malignancy<sup>2</sup>.

Endometrial biopsy is used as a diagnostic aid in AUB. It is done as a first-line test in women >45 years of age presenting with AUB. Endometrial biopsy is also done in patients <45 years of age with a history of unopposed estrogen exposure, failed medical management, and persistent AUB<sup>3</sup>. The prime idea is to rule out the precursor lesions like hyperplasia and aggressive endometrial carcinoma<sup>2</sup>. The present study was done to determine the histopathological spectrum of endometrium in women presenting with abnormal uterine bleeding.

Abnormal uterine bleeding is classified into two broad categories. The first category is due to organic causes like endometritis, myometritis, adenomyosis, leiomyomas, endometrial, and cervical polyps, endometrial hyperplasia, and malignant lesions of the endometrium and cervix. The second category is because of dysfunctional uterine bleeding, caused by anovulation<sup>4</sup>.

AUB can be caused by a wide variety of disorders; dysfunctional uterine bleeding is commonly responsible in premenopausal women. In 3-10% of women of the reproductive age group with AUB, infectious or reactive processes of the endometrium, like acute and chronic endometritis, are observed<sup>1</sup>. Endometrial polyps are a common cause of abnormal uterine bleeding in 8-10% of premenopausal women. Abnormal uterine bleeding is commonly present in 90% of patients with endometrial adenocarcinoma<sup>4</sup>.

Abnormal uterine bleeding can be a harbinger of sinister pelvic pathology or denote a relatively minor problem; therefore, a thorough investigation into the problem is called for in every patient presenting with this complaint<sup>5</sup>.

Histopathological correlation with the clinical symptoms of AUB was good in the perimenopausal age group. Histopathology, however helped in accurate diagnosis of cases missed clinically.

Hence it is recommended that the histological examination of the endometrium is a must in cases of abnormal uterine bleeding, so as to exclude the cases of hyperplasia, particularly atypical hyperplasia and carcinomatous focus in a hyperplastic endometrium, who may need hysterectomy and further treatment<sup>6</sup>.

This study is therefore conducted to know the various endometrial lesions among premenopausal women with abnormal uterine bleeding in Vinayaka Mission Kirupananda Variyar Medical College and Research Centre, Salem.

### **Aims and Objectives**

1. To explore the spectrum of endometrial lesions concerning age groups among premenopausal women.
2. To establish a histopathological analysis of endometrial samples collected from premenopausal women presenting with AUB.

## MATERIALS AND METHODS

**Source of Data:** All female patients aged between 40 and 50 years, inclusive, presenting with abnormal uterine bleeding and admitted to the inpatient ward of a tertiary care hospital and peripheral referral centers during a one-year period were included in this cross-sectional study.

**Methods of Collection of Data:** Samples of endometrial tissue were obtained via Dilation and Curettage (D&C), Endometrial Biopsy and Hysterectomy. Detailed requisition forms containing clinical data of the study subjects accompanied the endometrial tissue samples, which were preserved in 10% formalin solution for 12 hours and processed for microscopic examination using standard Histopathology procedures.

**Inclusion Criteria:** All patients aged between 40 and 50 years presenting with abnormal uterine bleeding were included.

**Exclusion Criteria:** Patients outside the age range of 40 to 50 years.

Patients with abnormal uterine bleeding due to non-endometrial causes like lesions of the myometrium and adnexa. Patients using Intrauterine Devices causing abnormal uterine bleeding. Patients presenting with abnormal uterine bleeding due to pregnancy and related complications.

**Methods of Study:** A cross sectional study was conducted on 100 cases of Abnormal Uterine Bleeding (AUB), and the data were analyzed based on age and the histopathological spectrum of endometrial lesions. Descriptive statistics, including frequency and percentage, were calculated for bleeding patterns and histopathological findings in the AUB cases. The Chi-square test (or Fisher's exact test for small samples) was used to examine the association between age and histopathological spectrum, with significance levels set at  $p < 0.05$  and  $p < 0.01$ .

## RESULTS

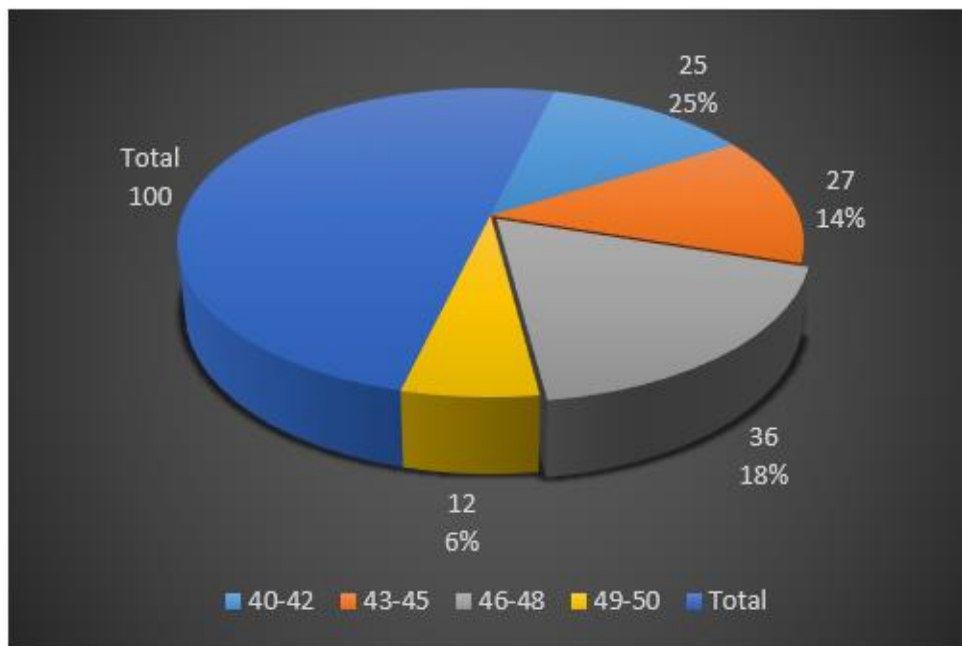
### Age Incidence of AUB Cases in Premenopausal Women

A total of 100 cases of Abnormal Uterine Bleeding (AUB) among premenopausal women were enrolled in the study over a period of 1 years. The age incidence of premenopausal women with AUB ranged from 40 to 50 years, with a mean age of 45.52 years (Standard deviation:  $\pm 4.17$  years).

**Table 1: Age Incidence of AUB Cases in Premenopausal Women**

Age (in years)	Frequency (Cases)	Percentage (%)
40-42	25	25%
43-45	27	27%
46-48	36	36%
49-50	12	12%
Total	100	100.0

The highest number of AUB cases was observed in the age group of 46 to 48 years, while the minimum number of cases was seen in the 49 years and above age group.



**Figure 1: Age Incidence of AUB Cases in Premenopausal Women Frequency (Cases)**

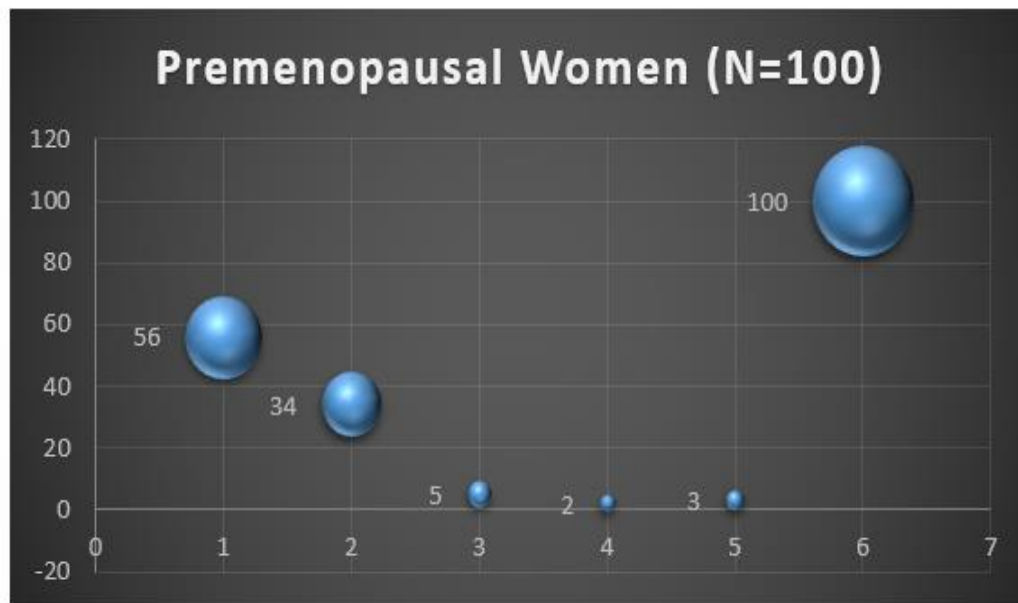
**Table 2: Age Incidence of Histopathological Spectrum of Endometrial Lesions**

Age in years	Proliferative	Secretory	Atrophic	Polyp	Adenocarcinoma	Total
40-42	16 (64%)	9 (36%)	0	0	0	25
43-45	13 (48%)	10 (37%)	1 (4%)	1 (4%)	2 (7%)	27
46-48	20 (56%)	11 (31%)	3 (8%)	1 (3%)	1 (3%)	36
49-50	7 (58%)	4 (33%)	1 (8%)	0	0	12
Total	56	34	5	2	3	100

In this study, there was a high association between the histopathological spectrum of endometrial lesions and age ( $p < 0.0001$ ). The most common endometrial profile was proliferative (56%) in the age group of 46-48 years, followed by secretory (31%) and atrophic (8%) patterns in the same age group. Polyps were more common in the age group of 43-45 years (4%). Endometrial adenocarcinoma was observed in 7% of cases in the age group of 43-45 years.

**Table 3: Spectrum of Endometrial Lesions in Premenopausal Women**

Type of Endometrium	Premenopausal Women (N=100)	Percentage (%)
Proliferative	56	56%
Secretory	34	34%
Atrophic	5	5%
Polyps	2	2%
Adenocarcinoma	3	3%
<b>Total</b>	<b>100</b>	<b>100%</b>



**Figure 2: Premenopausal Women (N=100)**

The most common endometrial pattern among premenopausal women with AUB was proliferative (56%), followed by secretory (34%), atrophic (5%), polyps (2%), and adenocarcinoma (3%).

## DISCUSSION

Total number of 100 patients presented with abnormal uterine bleeding were included in the study.

### Age Incidence of AUB Cases

The age incidence of the patients with abnormal uterine bleeding varied from 40 to 50 years, with the maximum presentation seen in the age group of 46 to 48 years (36%) in the present study, which correlated with studies conducted by Manjari S et al <sup>16</sup> (36%), varied with study conducted by Doraiswami S et al (33.5%) (2011).

### Incidence of Various Endometrial Profiles in AUB Cases

The incidence of various endometrial lesions in descending order of frequency were proliferative (56%), secretory (34%), atrophic (5%), polyps (2%), and endometrial adenocarcinoma (3%).

The proliferative endometrial pattern (56%) was predominant in this study, correlating with observations by Prathipaa et al <sup>8</sup>, who also reported a high incidence of 54.63%. In contrast, separate studies conducted by Sharma R et al <sup>7</sup> and Manjari S et al <sup>9</sup> 2023, Bhatta et al<sup>15</sup> (2012) 26.6% reported lower incidences 51.7% and 44.8%, 26.6% respectively.

**Table 4: Comparison of Spectrum of Endometrial Lesions in the Present Study with Other Studies**

S. No	Type of Endometrium	Manjari S et al (2023) <sup>9</sup> (%)	Misra J et al (2023) <sup>6</sup> (%)	Vijayaraghavan A Sr <sup>16</sup> (2022) %	Manjari <sup>13</sup> (2021)	Prathipaa et al (2020) <sup>8</sup> (%)	Vaidya <sup>10</sup> (2013) %	Bhatta <sup>15</sup> (2012) %	Present Study (%)
1	Proliferative	26 (36.1%)	115 (70.55)	34 (37.77%)	20 (28.17%)	59 (54.63%)	35 (18.8%)	14 (26.16%)	56%
2	Secretory	14 (19.4%)	37 (22.69)	20 (22.22%)	4 (5.63%)	12 (11.11%)	37 (19.8%)	7 (14.58%)	34%
3	Atrophic	3 (4.1%)	0 (0%)	0 (0%)	10 (14%)	0 (0%)	8 (4.3%)	2 (4.16%)	5%
4	Polyps	2 (2.7%)	3 (1.80)	2 (2.22%)	8 (11.26%)	3 (2.78%)	2 (1.07%)	3 (6.25%)	2%
5	Adenocarcinoma	6 (8.3%)	01 (0.6)	1 (1.11%)	1 (1.4%)	0 (0%)	3 (1.61%)	2 (4.16%)	3%

### Age Incidence of Histopathological Spectrum of Endometrial Lesions

There was a high association between age and the histopathological spectrum of endometrial lesions in our study subjects ( $p < 0.0001$ ). The proliferative pattern was the most common endometrial profile occurring in the age group of 46-48 years (56%) in our study, supported by Vijayaraghavan A Sr et al<sup>16</sup> (54.8%) 2022.

In our study secretory endometrium is 34% in age group 40 to 50 years, while in the study conducted by Mishra et al<sup>6</sup> (2023) and Vijayaraghavan A Sr et al<sup>16</sup> (2022) reported lower incidence (22.6% and 22.22%) respectively.

Atrophic endometrium (5%) was commonly seen in the age group of 46 to 48 years and above, similarly observed by Bhatta S et al<sup>15</sup> (4.16%) 2012, 4.3% in S Vaidya et al<sup>10</sup> (2013). Where lesser cases 4.1% in Manjari S<sup>9</sup> (2023), contradictory to 9.8% in Nivedita Singh et al<sup>11</sup> and (14.0%) in Manjari et al<sup>13</sup> (2021) where higher incidence of atrophic endometrium was reported.

Endometrial Polyps (2%) were the third most common among the endometrial lesions causing abnormal uterine bleeding in the age group of 46 years and above, consistent with 2.7% in Manjari S<sup>9</sup> (2023), 2.7% in Prathipaa R<sup>8</sup>, 1.07% in S Vaidya et al<sup>10</sup> (2013), whereas 5.3% in Swami Y M et al<sup>18</sup> (2015), 7.3% Nivedita Singh et al<sup>11</sup> (2017) and 11.26% in Manjari et al<sup>13</sup> (2021) reported a higher incidence.

**Table 5: Comparison of Endometrial Adenocarcinoma in the Present Study with Various Studies**

Authors	Manjari S (2023) <sup>9</sup>	PT Shinde (2023) <sup>14</sup>	Alshdaifat EH et al (2022) <sup>17</sup>	Nivedita singh et al (2017) <sup>11</sup>	Vaidya et al (2013) <sup>10</sup>	Bhatta S et al (2012) <sup>15</sup>	Doraisamy et al (2011) <sup>12</sup>	Present Study (2024) (%)
No of cases and %	6 (8.3%)	2 (2.8%)	4 (4.7%)	2 (1.6%)	3 (1.61%)	2 (4.16%)	5 (3.6%)	3 (3%)
Age group	41-50	40-50	40-49	40-50	40-50	40-49	40-50	43-48

The peak incidence of endometrial adenocarcinoma in our study was seen in the age group of 43-48 years (3%), correlating with PT Shinde et al<sup>14</sup> 2.8 % (2023) and Doraisamy et al<sup>12</sup> 3.6% (2011), lesser in Nivedita singh et al<sup>11</sup> 1.6% (2017) and Vaidya et al<sup>10</sup> 1.61% (2013) and higher in Bhatta et al<sup>15</sup> 4.16% (2012), 4.7% in Alshdaifat EH et al<sup>17</sup> (2022) and Manjari et al<sup>9</sup> 8.3% (2023).



## CONCLUSION

The primary objectives of this study were to assess the spectrum of endometrial lesions in relation to age among premenopausal women and to determine the histological patterns of the endometrium. Our findings reveal that besides normal physiological changes, premenopausal women also experience various benign and malignant conditions associated with abnormal uterine bleeding (AUB), with notable variations across age groups. The high association observed between bleeding presentations and endometrial lesions underscores the critical importance of investigating the etiology of AUB, whether physiological or pathological.

The symptom of "abnormal uterine bleeding" necessitates prompt attention and comprehensive evaluation, particularly in women over 40 years of age. Microscopic analysis of the endometrium should be considered a standard diagnostic procedure for all such cases to ensure accurate diagnosis and appropriate management.

It's worth noting that the categorization of endometrial causes contributing to AUB in premenopausal women has been hindered by inconsistent nomenclature. Therefore, there is a pressing need for the development of standardized terminology encompassing bleeding patterns, endometrial profiles, and classifications of AUB. These recommendations serve as a foundation for future research and collaborative efforts aimed at enhancing clinical practice guidelines and improving patient outcomes in the management of AUB.

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**Conflict of Interest:** None declared.

**Ethical approval:** Institutional ethical committee accepted this study. The study was approved by the institutional human ethics committee, Vinayaka Mission's Kirupananda Variyar Medical College and Hospital, Salem, Tamilnadu India (VMKVMC&H/IEC/21/124 Dated: 08-06-2021). Informed written consent was obtained from all the study participants and only those participants willing to sign the informed consent were included in the study. The risks and benefits involved in the study and the voluntary nature of participation were explained to the participants before obtaining consent. The confidentiality of the study participants was maintained. The study was approved by the Institutional Ethics Committee.

### Authors' contributions:

**Dr. K. Sathiyamurthy** - conceptualization, data curation, investigation, methodology, project administration, visualization, writing—original draft, writing—review and editing, **Dr. S. Waheeda** - conceptualization, methodology, writing—original draft, writing—review and editing; **Dr. R Tamizhamudhu**- conceptualization, visualization, supervision, writing—original draft; **Dr. Keerthini Ganesan** - methodology, writing—original draft, writing, review and editing. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work. All authors have read and agreed to the published version of the manuscript.

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