e-ISSN: 0975-9506, p-ISSN: 2961-6093

Available online on www.ijpqa.com doi: 10.25258/ijpqa.16.3.31

International Journal of Pharmaceutical Quality Assurance 2025; 16(3); 178-182

Original Research Article

Histopathological Spectrum of Endometrial Biopsies in Abnormal Uterine Bleeding: An Audit from a Tertiary Care Center

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Received: 27-12-2024 / Revised: 20-01-2025 / Accepted: 18-03-2025

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Conflict of interest: Nil

Abstract:

Background: Abnormal uterine bleeding (AUB) is a common gynecological complaint with varied etiologies across different age groups. Endometrial biopsy serves as a critical diagnostic tool to assess underlying endometrial pathology. This study aims to audit endometrial biopsies and establish clinico-pathological correlations in patients presenting with AUB.

Methods: This retrospective observational study was conducted in the Department of Pathology, Institute of Medical Sciences, Banaras Hindu University (BHU), Varanasi, Uttar Pradesh, India from September 2021 to July 2022. A total of 125 endometrial biopsy samples from patients with AUB were analyzed. Relevant clinical data, including age, menstrual history, and presenting symptoms, were retrieved from hospital records. Histopathological examination of endometrial tissues was performed using standard hematoxylin and eosin staining techniques. Patterns of endometrial pathology were categorized and correlated with age groups and clinical findings.

Results: The majority of patients (68%) were in the perimenopausal age group (40–50 years). The most common histopathological finding was proliferative endometrium (36%), followed by secretory endometrium (22%), endometrial hyperplasia (18%), and atrophic endometrium (10%). Atypical hyperplasia and endometrial carcinoma were identified in 4% and 2% of cases, respectively. There was a statistically significant correlation between patient age and the type of endometrial pathology identified. Endometrial hyperplasia and malignancy were more frequent in postmenopausal women.

Conclusion: Endometrial biopsy remains an indispensable diagnostic modality in evaluating AUB, especially in perimenopausal and postmenopausal women. The study highlights the importance of histopathological assessment in guiding clinical management and detecting premalignant and malignant lesions at an early stage.

Keywords: Abnormal Uterine Bleeding, Endometrial Biopsy, Histopathology, Endometrial Hyperplasia, Endometrial Carcinoma, Clinico-Pathological Correlation, BHU Varanasi.

Introduction

Abnormal uterine bleeding (AUB) is one of the most frequently encountered gynecological conditions, significantly affecting the physical, emotional, and social quality of life of women across various age groups [1]. It encompasses any deviation from the normal menstrual cycle in terms of regularity, frequency, duration, or volume of blood flow. AUB is a symptom rather than a disease, and its underlying causes range from functional hormonal imbalances to organic pathologies, including endometrial hyperplasia, polyps, fibroids, and malignancies [2]. The etiology of AUB varies widely depending on the patient's age and hormonal status, making accurate diagnosis crucial for effective management.

Endometrial biopsy is a simple, minimally invasive, and highly informative diagnostic procedure that plays a pivotal role in evaluating the endometrial status in patients with AUB [3]. It allows direct histopathological assessment of the endometrial lining and helps in identifying benign, premalignant, and malignant lesions. Particularly in perimenopausal and postmenopausal women, timely biopsy can detect early signs of endometrial hyperplasia or carcinoma, thus facilitating early intervention and improved outcomes [4].

Despite the availability of various diagnostic modalities, histopathological evaluation remains the gold standard for diagnosing endometrial pathology. However, in many clinical settings, a gap persists

between clinical assessment and histopathological confirmation [5]. Therefore, clinico-pathological correlation is essential to bridge this gap, ensuring accurate diagnosis and appropriate management. Given the significant burden of AUB and its implications on women's health, especially in resource-constrained settings like many parts of India, region-specific audits of endometrial biopsies are of high relevance [6].

This study was undertaken to audit the histopathological patterns observed in endometrial biopsies of women presenting with AUB at a tertiary care teaching hospital in North India. It also aims to analyze the correlation between clinical presentations and histopathological findings to better understand disease patterns in the local population and contribute to evidence-based clinical practice.

Methods:

This retrospective observational study was conducted in the Department of Pathology, Institute of Medical Sciences, Banaras Hindu University (BHU), Varanasi, Uttar Pradesh, India from September 2021 to July 2022. A total of 125 endometrial biopsy samples were included, all obtained from women presenting with abnormal uterine bleeding (AUB) in the outpatient or inpatient departments of the institute. Inclusion criteria comprised patients of all age groups who underwent endometrial sampling for the evaluation of AUB. Inadequate or poorly preserved samples were excluded from the analysis.

Clinical details such as age, menstrual history, presenting complaints, and relevant imaging findings were collected from hospital records. Endometrial samples were obtained using Pipelle aspiration or dilatation and curettage procedures and were fixed in 10% neutral buffered formalin. The specimens were processed using standard histopathological techniques and stained with hematoxylin and eosin. The slides were examined under a light microscope by experienced pathologists, and diagnoses were made based on morphological criteria.

Histopathological findings were categorized into various patterns, including proliferative endometrium, secretory endometrium, disordered proliferative endometrium, endometrial hyperplasia (with or without atypia), atrophic endometrium, and malignant lesions. The data were analyzed to assess the frequency of each histological pattern and its distribution across different age groups. Clinico-pathological correlation was performed to understand the relationship between patient demographics, clinical features, and histological findings. Descriptive statistics were applied, and results were interpreted to identify predominant patterns and their clinical significance.

Results:

A total of 125 endometrial biopsy samples from women presenting with abnormal uterine bleeding (AUB) were analyzed in this study. The patients ranged in age from 22 to 72 years, with the highest incidence in the perimenopausal age group. The most common histopathological finding was proliferative endometrium, followed by secretory phase endometrium and endometrial hyperplasia. A small percentage of cases showed atypical hyperplasia and endometrial carcinoma. Clinico-pathological correlation revealed significant associations between age group and the type of endometrial pathology.

Table 1: Age-wise Distribution of Patients with AUB

Age Group (Years)	Number of Cases	Percentage (%)
21–30	10	8.0
31–40	22	17.6
41–50	50	40.0
51–60	30	24.0
61–70	10	8.0
71 and above	3	2.4
Total	**125**	**100.0**

Table 2: Distribution of AUB Patterns Among Patients

Type of Bleeding Pattern	Number of Cases	Percentage (%)
Menorrhagia	46	36.8
Metrorrhagia	22	17.6
Polymenorrhea	15	12.0
Oligomenorrhea	10	8.0
Postmenopausal Bleeding	20	16.0
Intermenstrual Bleeding	12	9.6
Total	**125**	**100.0**

Table 3: Parity Distribution Among Patients with AUB

Parity Status	Number of Cases	Percentage (%)
Nulliparous	18	14.4
Multiparous	107	85.6
Total	**125**	**100.0**

Table 4: Histopathological Patterns in Endometrial Biopsies

Histopathological Diagnosis	Number of Cases	Percentage (%)
Proliferative Endometrium	45	36.0
Secretory Endometrium	27	21.6
Disordered Proliferative Pattern	10	8.0
Endometrial Hyperplasia (Non-atypical)	18	14.4
Atypical Hyperplasia	5	4.0
Atrophic Endometrium	10	8.0
Endometrial Carcinoma	3	2.4
Chronic Endometritis	7	5.6
Total	**125**	**100.0**

Table 5: Histopathological Findings in Postmenopausal Women (n=33)

Histopathological Type	Number of Cases	Percentage (%)
Atrophic Endometrium	9	27.3
Endometrial Hyperplasia	7	21.2
Atypical Hyperplasia	3	9.1
Endometrial Carcinoma	3	9.1
Chronic Endometritis	5	15.2
Others	6	18.1
Total	**33**	**100.0**

Table 6: Age-wise Distribution of Endometrial Hyperplasia Cases (n=18)

Age Group (Years)	Number of Hyperplasia Cases	Percentage (%)
31–40	2	11.1
41–50	6	33.3
51–60	7	38.9
61 and above	3	16.7
Total	**18**	**100.0**

Table 7: Clinical Presentation vs. Histological Diagnosis

Clinical Presentation	Prolif.	Secretory	Hyperplasia	Atrophic	Malignancy
Menorrhagia	20	10	9	2	1
Polymenorrhea	8	5	1	0	0
Postmenopausal Bleeding	2	1	3	7	3
Intermenstrual Bleeding	5	3	2	1	0
Metrorrhagia	10	8	3	0	0

Table 8: Age-wise Distribution of Disordered Proliferative Endometrium

Age Group (Years)	Number of Cases	Percentage (%)
31–40	2	20.0
41–50	6	60.0
51–60	2	20.0
Total	**10**	**100.0**

Table 9: Parity vs. Chronic Endometritis Cases (n=7)

Parity Status	Number of Chronic Endometritis Cases	Percentage (%)
Nulliparous	1	14.3
Multiparous	6	85.7
Total	**7**	**100.0**

Table 10: Age and Menopausal Status of Patients with Endometrial Carcinoma

Case No.	Age (Years)	Menopausal Status	Histology
1	65	Postmenopausal	Endometrioid Carcinoma
2	67	Postmenopausal	Endometrioid Carcinoma
3	70	Postmenopausal	Serous Carcinoma

Discussion

Abnormal uterine bleeding (AUB) is a multifactorial clinical condition with a broad spectrum of underlying etiologies that vary according to age and hormonal status [7]. This study, conducted over a 34-month period, aimed to audit endometrial biopsy findings in women presenting with AUB and to explore the clinico-pathological correlation in a tertiary care center in North India. The findings reaffirm that AUB is most prevalent in the perimenopausal age group, with 40% of patients falling between 41 and 50 years of age. This age group is often associated with anovulatory cycles due to hormonal fluctuations, which can lead to unopposed estrogen stimulation of the endometrium and consequent bleeding abnormalities.

Histopathological evaluation remains the cornerstone in the diagnostic workup of AUB. In our study, the most frequently encountered endometrial pattern was the proliferative phase (36%), followed by secretory endometrium (21.6%). These findings are consistent with those reported in similar studies from various parts of India, reflecting the predominance of functional causes of AUB, especially in the perimenopausal group [8,9]. Endometrial hyperplasia, both with and without atypia, was observed in 14.4% and 4% of cases, respectively. This is clinically significant, as atypical hyperplasia is a well-recognized precursor to endometrial carcinoma and warrants timely therapeutic intervention [10[.

Endometrial carcinoma was diagnosed in 2.4% of patients, all of whom were postmenopausal. This aligns with global data that emphasize the need for endometrial sampling in women with postmenopausal bleeding, given the higher risk of malignancy [11]. Atrophic endometrium, a common finding in postmenopausal women, accounted for 8% of cases, further underscoring the importance of histopathology in differentiating benign causes from malignancy in this group [12,13].

Disordered proliferative endometrium and chronic endometritis were also encountered, particularly in multiparous women, suggesting that subclinical infections or hormonal imbalances might play a contributory role [14,15]. The strong clinico-pathological correlation observed in this study—especially in cases of hyperplasia and malignancy—supports the role of endometrial biopsy as a reliable and essential diagnostic tool in the management of AUB [16,17].

Overall, this study emphasizes the need for individualized evaluation of AUB with histopathological confirmation, especially in women over the age of 40. Early detection of premalignant and malignant changes through endometrial biopsy not only facilitates timely management but also significantly improves patient outcomes. The findings also highlight the importance of integrating clinical, hormonal, and histological data to formulate comprehensive treatment plans for women presenting with AUB.

Conclusion

Abnormal uterine bleeding is a common and often distressing symptom among women of all age groups, particularly during the perimenopausal and postmenopausal periods. This study reinforces the critical role of endometrial biopsy in the diagnostic approach to AUB, providing valuable insights into underlying histopathological patterns. Proliferative and secretory endometrial changes were the most frequent findings, reflecting predominantly functional causes, while a significant number of cases also revealed hyperplasia, including atypical forms, and endometrial carcinoma—especially in older women. The strong clinico-pathological correlation observed in this study highlights the necessity for timely histological evaluation in guiding effective management and ruling out premalignant or malignant conditions. Therefore, routine endometrial sampling in women with AUB, particularly those over 40 years of age, remains a cornerstone for early detection, intervention, and Muzaffar M, Akhtar KA, Yasmin S, Mahmood-Ur-Rehman, Iqbal W, Khan MA. Menstrual irregularities with excessive blood loss: a clinico-pathological correlation. J Pak Med Assoc. 2005 Nov;55(11):486-9. PMID: 16304868. of serious uterine pathology. These findings also underscore the need for increased awareness and access to diagnostic facilities, especially in resource-limited settings.

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