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Original Research Article

A Comparative Analysis of Clinical Diagnosis and Histopathological Findings in Abnormal Uterine Bleeding

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Abstract:

Background: Abnormal uterine bleeding (AUB) is a common gynecological complaint with diverse etiologies, making accurate diagnosis challenging. Histopathological examination remains the gold standard for confirming the underlying endometrial pathology.

Aim: To compare clinical diagnosis with histopathological findings in women presenting with abnormal uterine bleeding and assess clinicopathological concordance.

Methodology: A hospital-based cross-sectional observational study was conducted over one year in the Department of Obstetrics and Gynaecology, Shahid Nirmal Mahato Medical College & Hospital, Dhanbad, Jharkhand. Eighty women aged 25–55 years with AUB underwent clinical evaluation followed by endometrial sampling using Pipelle biopsy or dilatation and curettage. Histopathological findings were compared with provisional clinical diagnoses using descriptive statistics and Chi-square/Fisher's exact test.

Results: Most participants (77.6%) were aged 35–55 years. Ovulatory dysfunction (43.8%) was the most common clinical diagnosis, while proliferative endometrium (23.8%) and endometrial hyperplasia (22.5%) were the predominant histopathological findings. Histopathology confirmed 15 of 18 clinically diagnosed hyperplasia cases, 9 of 10 endometrial polyps, and all 7 cases of endometrial carcinoma. Overall clinicopathological concordance was observed in 62 (77.5%) cases.

Conclusion: Clinical evaluation demonstrated good diagnostic agreement with histopathology; however, histopathological examination remains indispensable for confirming diagnosis, detecting significant endometrial lesions, and guiding appropriate management in women with AUB.

Keywords: Abnormal uterine bleeding, Histopathology, Clinical diagnosis, Endometrial hyperplasia, Endometrial carcinoma, Clinicopathological concordance.

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Introduction

Abnormal uterine bleeding (AUB) is a frequently seen gynecologic symptom in clinical practice and a major reason for morbidity among women of different reproductive, perimenopausal, and postmenopausal age groups [1]. It is characterized as abnormal bleeding from the uterine corpus which is excessive in volume, duration, regularity, and/or frequency and is not associated with normal menstrual periods. AUB is a symptom, not a disease, and encompasses a wide range of underlying pathological and physiological disorders. It has significant effects on the physical, psychological, social and reproductive health of women and can disrupt functioning, work productivity and quality of life. Therefore, it represents a significant percentage of gynecological outpatient attendance, consultations in emergency and hospital admissions around the world [2].

The causes of the abnormal uterine bleeding are heterogeneous and dependent on the age of the patient, reproductive status, hormonal profile and medical conditions [3]. Anovulatory cycles and hormonal disturbances are common in adolescence and reproductive years, while various structural lesions including uterine fibroids, endometrial polyps, adenomyosis, endometrial hyperplasia and malignancies occur more frequently as women approach the menopause. A variety of systemic diseases, coagulation abnormalities, medications and medical procedures can also lead to irregular bleeding. This large number of causes makes it difficult to make a diagnosis based on clinical symptoms alone.

The International Federation of Gynecology and Obstetrics (FIGO) has established the PALM-COEIN Classification system, which classifies the causes of abnormal uterine bleeding as structural

and non-structural abnormalities [4]. Structural causes are symbolized by PALM: Polyp, Adenomyosis, Leiomyoma, Malignancy and hyperplasia and non-structural causes are symbolized by COEIN: Coagulopathy, Ovulatory dysfunction, Endometrial disorders, Iatrogenic causes, and not otherwise classified conditions. This is a universally adopted standard that has enhanced the communication of clinicians and researchers with each other, enabled standardized reporting, and informed suitable diagnostic and therapeutic interventions [5]. However, with this classification system available, it is difficult to distinguish between different underlying pathologies using clinical presentation alone, as many disorders can have a similar presentation.

The typical clinical diagnosis of AUB includes a thorough history, physical examination, laboratory testing and imaging tests like ultrasonography. These allow some clues to be gained on likely etiologies and help with an initial diagnosis. The clinical assessment alone is, however, often not sufficient to distinguish benign from pre-cancerous conditions and endometrial carcinoma because of the high rates of overlap in clinical manifestations of these entities [6]. In patients with hormonal imbalance, for instance, or those who have endometrial hyperplastic diseases, such as hyperplasia, polyp or early endometrial malignancy, for example, heavy or irregular bleeding is a possibility, and definitive diagnosis may be difficult without tissue evaluation.

The gold standard for diagnosis of the underlying endometrial pathology in women with abnormal uterine bleeding has been histopathological examination of endometrial tissue [7]. It evaluates the cellular morphology and architecture of the endometrium directly at the microscope level, allowing one to confirm or exclude certain pathological conditions. In addition to confirming clinical and radiological diagnosis, histopathology is also crucial for the early diagnosis of endometrial cancer and the identification of pre-cancerous changes like endometrial hyperplasia, allowing early intervention and better outcomes for the patient. Endometrial sampling, usually by dilatation and curettage or Pipelle biopsy, is specifically recommended in women older than 40 years, in perimenopausal and postmenopausal women and in women with persistent abnormal uterine bleeding and/or risk factors for endometrial carcinoma [8].

Clinical judgement supports the evaluation of the patient but discrepancies between the clinical diagnosis and histopathological results are common. These variations can contribute to the failure to diagnosis, treat, or intervene at the right time or to unnecessary surgical interventions, or failure to be treated at an early stage for large amounts of endometrial disease. Correlation between clinical and histopathological diagnosis is necessary, therefore, to judge the accuracy of clinical diagnosis and to better manage the patient. Comparative analysis of these findings can also be useful for identifying the most frequent clinical presentations in relation to the different histopathological patterns and facilitate the evidence-based decision making in gynecological practice.

It was decided, therefore, to undertake the present study to carry out a comparative study of clinical diagnosis and histopathological examination of the abnormal uterine bleeding women. The study aims to compare clinical evaluation with histopathological evaluation to determine accuracy of the diagnosis, the most common endometrial pathologies seen with AUB and the need for histopathological confirmation for accurate diagnosis and therapy.

Methodology

Study Design: This was a hospital-based cross-sectional observational study conducted to compare the clinical diagnosis with histopathological findings among women presenting with abnormal uterine bleeding (AUB).

Study Area: The study was conducted in the Department of Obstetrics and Gynaecology, Shahid Nirmal Mahato Medical College & Hospital, Dhanbad, Jharkhand, India.

Study Duration: The study was conducted over a period of one year.

Study Participants

Inclusion Criteria

- Women aged 25–55 years presenting with abnormal uterine bleeding.
- Women who underwent endometrial sampling (pipelle biopsy or dilatation and curettage) for evaluation of AUB.
- Women who provided written informed consent to participate in the study.
- Women with complete clinical records and histopathological reports.

Exclusion Criteria

- Women with pregnancy-related causes of uterine bleeding.
- Women with known coagulation or bleeding disorders.
- Women receiving anticoagulant therapy.
- Women with cervical or vaginal lesions identified as the source of bleeding.
- Women with incomplete clinical data or inadequate endometrial biopsy specimens.
- Women who declined to provide informed consent.

Sample Size: A total of 80 women diagnosed with abnormal uterine bleeding and fulfilling the eligibility criteria were included in the study.

Procedure: After obtaining approval from the Institutional Ethics Committee, written informed consent was obtained from all eligible participants before enrollment. Women attending the Department of Obstetrics and Gynaecology with complaints of abnormal uterine bleeding were screened according to the predefined inclusion and exclusion criteria. A consecutive sampling method was followed until the required sample size of 80 participants was achieved.

A detailed clinical history, including age, menstrual history, parity, bleeding pattern, associated symptoms, and relevant medical history, was recorded. General physical and gynecological examinations were performed, followed by routine laboratory investigations and pelvic ultrasonography to identify possible causes of abnormal uterine bleeding. Based on these findings, a provisional clinical diagnosis was made.

All participants underwent endometrial sampling by either pipelle biopsy or dilatation and curettage (D&C), depending on the clinical indication. The endometrial specimens were fixed in 10% neutral buffered formalin, processed routinely, embedded in paraffin, sectioned at 4–5 µm thickness, and stained with hematoxylin and eosin (H&E). The stained sections were examined under a light microscope by an experienced pathologist who was blinded to the clinical diagnosis.

Histopathological findings were categorized into normal endometrium (proliferative or secretory) and abnormal lesions, including endometrial hyperplasia, polyp, chronic endometritis, atrophic endometrium, disordered proliferative endometrium, and endometrial carcinoma. The histopathological findings were subsequently compared with the corresponding clinical diagnoses to evaluate the concordance and identify discrepancies between clinical and pathological assessments.

Statistical Analysis: The collected data were entered into Microsoft Excel and subsequently analyzed using Statistical Package for the Social Sciences (SPSS) version 27.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were expressed as frequencies, percentages, means, and standard deviations wherever appropriate. The association between clinical diagnosis and histopathological findings was assessed using the Chi-square test or Fisher's exact test, as applicable. Diagnostic agreement between clinical and histopathological diagnoses was evaluated through cross-tabulation. A p-value of less than 0.05 was considered statistically significant throughout the analysis.

Result

Table 1 shows the distribution of participants according to age group among the 80 women included in the study. The highest proportion of participants belonged to the 35–44 years and 45–55 years age groups, with 31 (38.8%) women each, indicating that the majority of the study population was in the middle and late reproductive age categories. In contrast, the 25–34 years age group comprised 18 (22.5%) participants, representing the smallest proportion. Overall, the findings demonstrate that more than three-fourths (77.6%) of the participants were aged 35 years or above, suggesting that the study predominantly included women from older reproductive age groups.

Table 1: Distribution of Participants According to Age Group (N = 80)

Age Group (Years)	Frequency (n)	Percentage (%)
25–34	18	22.5
35–44	31	38.8
45–55	31	38.8
Total	**80**	**100**

Table 2 shows the distribution of participants according to clinical diagnosis among the 80 women included in the study. The most common clinical diagnosis was dysfunctional uterine bleeding (AUB-O), observed in 35 (43.8%) participants, indicating that ovulatory dysfunction was the predominant clinical presentation. Endometrial hyperplasia was diagnosed in 18 (22.5%) women, while endometrial polyp accounted for 10 (12.5%) cases. Fibroid uterus associated with abnormal uterine bleeding was noted in 9 (11.3%) participants, and suspected endometrial carcinoma was the least common diagnosis, identified in 8 (10.0%) women. Overall, benign causes constituted the majority of clinical diagnoses in the study population."

Table 2: Distribution of Participants According to Clinical Diagnosis (N = 80)

Clinical Diagnosis	Frequency (n)	Percentage (%)
Dysfunctional uterine bleeding (AUB-O)	35	43.8
Endometrial hyperplasia	18	22.5
Endometrial polyp	10	12.5
Fibroid uterus with AUB	9	11.3
Suspected endometrial carcinoma	8	10
Total	**80**	**100**

Table 3 shows the distribution of participants according to histopathological findings among the 80 women included in the study. The most common histopathological finding was proliferative endometrium, observed in 19 (23.8%) participants, followed closely by endometrial hyperplasia in 18 (22.5%) cases. Secretory endometrium was identified in 12 (15.0%) women, while endometrial polyp was reported in 9 (11.3%) participants. Endometrial carcinoma was confirmed in 7 (8.8%) cases, followed by chronic endometritis in 6 (7.5%) and atrophic endometrium in 5 (6.3%) women. Disordered proliferative endometrium was the least common finding, seen in 4 (5.0%) participants. Overall, benign endometrial lesions predominated, whereas malignant pathology accounted for a relatively small proportion of cases.

Table 3: Distribution of Participants According to Histopathological Findings (N = 80)

Histopathological Finding	Frequency (n)	Percentage (%)
Proliferative endometrium	19	23.8
Secretory endometrium	12	15
Endometrial hyperplasia	18	22.5
Endometrial polyp	9	11.3
Chronic endometritis	6	7.5
Atrophic endometrium	5	6.3
Endometrial carcinoma	7	8.8
Disordered proliferative endometrium	4	5
Total	**80**	**100**

Table 4 compares the clinical diagnosis with the corresponding histopathological findings among the 80 participants. Among the 35 women clinically diagnosed with dysfunctional uterine bleeding (AUB-O), the majority had proliferative endometrium (18) or secretory endometrium (10), while a few showed endometrial hyperplasia (3), chronic endometritis (2), atrophic endometrium (1), or disordered proliferative endometrium (1). Of the 18 women clinically diagnosed with endometrial hyperplasia, 15 were confirmed histopathologically, indicating a high level of diagnostic agreement. Similarly, 9 of the 10 clinically diagnosed endometrial polyps were confirmed on histopathology. All 7 histopathologically confirmed cases of endometrial carcinoma were clinically suspected, demonstrating excellent concordance. However, women with fibroid uterus and AUB exhibited varied histopathological findings, suggesting a lower clinicopathological correlation in this group.

Table 4: Comparison of Clinical Diagnosis and Histopathological Findings (N = 80)

Clinical Diagnosis	Proliferative Endometrium	Secretory Endometrium	Endometrial Hyperplasia	Endometrial Polyp	Chronic Endometritis	Atrophic Endometrium	Endometrial Carcinoma	Disordered Proliferative Endometrium	Total
Dysfunctional uterine bleeding (AUB-O)	18	10	3	0	2	1	0	1	**35**
Endometrial hyperplasia	1	1	15	0	0	0	0	1	**18**
Endometrial polyp	0	0	0	9	1	0	0	0	**10**
Fibroid uterus with AUB	0	1	0	0	3	4	0	1	**9**
Suspected endometrial carcinoma	0	0	0	0	0	0	7	1	**8**
Total	**19**	**12**	**18**	**9**	**6**				

Table 5 shows the clinicopathological concordance between clinical diagnosis and histopathological findings among the 80 participants included in the study. Clinical and histopathological diagnoses were concordant in 62 (77.5%) cases, indicating that the initial clinical diagnosis was confirmed by histopathological examination in more than three-fourths of the participants. In contrast, discordance between the clinical diagnosis and histopathological findings was observed in 18 (22.5%) cases, where the histopathological diagnosis differed from the clinical impression. Overall, the findings demonstrate a high level of agreement between clinical assessment and histopathological evaluation, while also highlighting the importance of histopathological examination for confirming the diagnosis and identifying cases that may be clinically misclassified.

Table 5: Clinicopathological Concordance Between Clinical Diagnosis and Histopathological Findings (N = 80)		
Concordance	**Frequency (n)**	**Percentage (%)**
Concordant (Clinical diagnosis agreed with histopathology)	62	77.5
Discordant (Clinical diagnosis differed from histopathology)	18	22.5
Total	**80**	**100**

Discussion

One of the most frequent gynecological complaints in women of reproductive and perimenopausal age is abnormal uterine bleeding (AUB), which is a primary reason for endometrial sampling. Majority of the women were aged between 35-44 years and 45-55 years that accounted for 38.8% each of the study population. The results are similar to those of Mishra and Sultan (2017) [9] who found that the majority of women with AUB were in the age group 41-50 years and Chapagain and Dangal (2020) [10] who also showed that the highest incidence of AUB was in women between 41 and 50 years of age. Likewise, Sharma et al. 2018 [11] found that almost 60% of women with AUB were in the age group of 40-50 years. The high prevalence of AUB in the late reproductive and perimenopausal years is believed to be primarily due to an increase of anovulatory cycles, hormonal imbalance and a greater incidence of endometrial abnormalities. Singh et al. (2019) [12] on the other hand reported a relatively younger mean age of presentation, which might be attributed to demographic differences and earlier presentation to healthcare services.

In the current study, clinically, AUB due to ovulatory dysfunction (AUB-O) is the most common diagnosis, accounting for 43.8% of cases, followed by endometrial hyperplasia and endometrial polyps. Similar findings were presented by Ahmed et al., 2018) [13] who reported that the main non-structural cause of AUB, based on the FIGO PALM-COEIN classification is ovulatory dysfunction. Similarly, Mishra (2017) showed that the most common cause of non-structural etiology was ovulatory disorders in women with AUB. Regional variations in clinical manifestation and referral characteristics were observed, as reported by Jetley et al. 2013 [14] who found that leiomyoma was a more common clinical diagnosis than ovulatory dysfunction. The differences can be attributed to differences in the study populations, imaging methods and inclusion criteria.

In the present study, proliferative endometrium (33.8%) was found to be the most common followed by endometrium hyperplasia (25.0%) and secretory endometrium (17.5%) on histopathology. Our results corroborate those of Mishra and Sultan (2017) who found that approximately 35% of cases had proliferative endometrium, and 25% had secretory endometrium. Likewise, Sharma et al. 2018 found the proliferative endometrium in 34% of AUB women and Jetley et al. 2013 reported a proliferative endometrium in 37% of cases with AUB. The high proportion of women with anovulatory cycles and prolonged estrogen stimulation contribute to the predominance of proliferative endometrium seen in these women. However, Patel et al. (2020) [15] reported secretory endometrium as the most common histopathological pattern in their series, suggesting that patient selection and hormonal status may influence the distribution of the bi-histology of the endometrium.

¨In the current study, 25.0% of the histopathological diagnosis was endometrial hyperplasia, which was the second most common lesion. This is a bit higher than the ratio reported by Jetley et al. (2013) (15.3%) and Singh et al. (2019) (18–20%) but comparable with Sharma et al. (2018) who reported hyperplasia in almost one-fourth of the patients who were evaluated for AUB. This higher rate of occurrence in the present study may be explained by the higher percentage of women over the age of 40 years, as women over 40 years old have a higher risk of endometrial proliferation due to the relatively higher amount of time they have been exposed to unopposed estrogen. Regular histopathological assessment is important as some specific types of hyperplasia may develop into endometrial carcinoma if left untreated.

The present study also showed the presence of endometrial carcinoma was relatively uncommon (3.8%). Similar low frequencies have been reported by Singh et al. (2019) (3–4%) and Jetley et al. (2013) (1.7%). Carcinoma was rare, but the clinical diagnosis was made in all cases of malignancy pre-confirmation of the diagnosis by pathological examination, highlighting the need to carefully evaluate all women who may have a high risk of developing malignancy. On the other hand, the incidence of malignancy was lower in Chapagain and Dangal (2020) study, perhaps because of variations in the age distribution and referral pattern. Overall, these results support the idea that although endometrial carcinoma is rare in women with AUB, the use of a hysteroscope for histopathological diagnosis is still a vital step in the workup to rule out malignancy, especially in women over 45 years of age or women with persistent symptoms.

Clinical and histopathological diagnosis showed that there was a significant difference between the two, as the women clinically diagnosed with AUB-O had proliferative endometrium, secretory endometrium, hyperplasia, chronic endometritis, atrophic

endometrium, and disordered proliferative endometrium in the histopathology results. The observations suggest that there is no definite relationship between clinical signs and endometrial pathology. Bolde et al. (2014) [16] also concluded that lesions often occur that are not clinically suspected, based on histopathological examination.

The present study, on the other hand, showed fair clinicopathological correlation in the diagnosis of endometrial hyperplasia, endometrial polyps, and suspected endometrial carcinoma. Histological confirmation of clinically diagnosed hyperplasia and almost all endometrial polyps and 100% of clinically suspected carcinomas. Bolde et al. (2014) reported a high concordance rate for premalignant and malignant lesions with clinical suspicion and histopathological diagnosis. In the present study, however, the clinicopathological correlation was relatively poor in women with fibroid uterus, because the majority of them had histopathology findings of endometrial pathology in addition to the fibroids. The results were similar to those reported by Mishra (2017) who reported that fibroids frequently occur with other endometrial abnormalities that cause abnormal bleeding.

In general, the present study showed a good clinicopathological concordance (77.5%) and a discordant result (22.5%). The degree of agreement is similar to those of Bolde et al. (2014) and Sharma et al. (2018) who obtained 75–80% agreement. However, almost 25% of women had mismatched clinical and pathological diagnoses, suggesting that sometimes the clinical diagnosis is insufficient and can miss important lesions in the endometrium. Thus, the gold standard for diagnosis, excluding premalignant and malignant conditions, and providing appropriate management in women with AUB is histopathological examination.

Conclusion

The present study demonstrated that abnormal uterine bleeding was most commonly observed among women aged 35–55 years, with ovulatory dysfunction being the predominant clinical diagnosis and proliferative endometrium the most frequent histopathological finding. Although clinical assessment showed a high clinicopathological concordance of 77.5%, discordance was identified in 22.5% of cases, indicating that clinical evaluation alone may not accurately identify the underlying endometrial pathology in all patients. Histopathological examination proved essential for confirming clinical impressions, detecting endometrial hyperplasia and carcinoma, and identifying additional lesions that could influence patient management. Therefore, endometrial sampling with histopathological evaluation should be considered an integral component of the diagnostic workup for women presenting with abnormal uterine bleeding, particularly in perimenopausal women and those with persistent symptoms or suspected premalignant and malignant lesions.

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