**ORIGINAL RESEARCH**

# Investigation of endometrial pathology in cases of abnormal uterine bleeding within a tertiary care hospital

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**ABSTRACT**

**Aim:** Investigation of endometrial pathology in cases of abnormal uterine bleeding within a tertiary care hospital.

**Material and methods:** The present study consisted of a cohort of 120 individuals who exhibited a clinical diagnosis of Abnormal Uterine Bleeding (AUB). The inclusion criteria for this study consisted of patients who had isolated endometrial pathology and presented with a clinical diagnosis of abnormal uterine bleeding (AUB). The age of the patients, their clinical presentation, examination findings, and details of the surgical procedures they underwent were documented based on requisition forms and hospital records.

**Results:** A total of 120 cases were included in this study. The age of patients ranged from 20 to 80 years. Maximum numbers of patients were in the age group 40 -50 years (50%). The predominant histological pattern observed was Secretory phase 28 (23.33%), Followed by Hyperplasia without atypia 26 (21.67%), Disordered proliferative 20 (16.67%), Atrophic phase 14 (11.67%), Proliferative phase 11 (9.17%), Basal endometrium 9 (7.5%), Gestational 4 (3.33%), Pill endometrium 3 (2.5%), Hyperplasia with atypia 2(1.67%) and Endometrial carcinoma 2(1.67%) and Menstrual phase 1(0.83%).

**Conclusion:** Age-related pathology is a contributing factor to abnormal uterine bleeding (AUB) of endometrial origin. The gold standard for evaluating abnormal uterine bleeding (AUB) is histopathological examination of the endometrium. The precise evaluation of endometrial sampling plays a crucial role in facilitating optimal therapeutic interventions.

**Keywords:** Endometrial, Abnormal Uterine Bleeding, Histopathology



## Introduction

Abnormal uterine bleeding (AUB) is a frequently encountered symptom in gynaecology clinics. The estimated prevalence of abnormal uterine bleeding (AUB) in women from the onset of menstruation (menarche) to the cessation of menstruation (menopause) ranges from approximately 9% to 14%. The estimated prevalence of abnormal uterine bleeding (AUB) in India is approximately 17.9%.[1] AUB, or abnormal uterine bleeding, is characterised by alterations in the frequency of menstruation, duration of flow, or volume of blood loss. The average duration of menstruation is reported to be 4.7 days, while the mean blood loss per menstrual cycle is estimated to be approximately 35ml. The aetiology of uterine bleeding encompasses both organic and non-organic factors. The utilisation of endometrial biopsy or curettage is a reliable and efficient diagnostic technique for assessing abnormal uterine bleeding, provided that other potential medical factors have been excluded. The identification of the underlying disease can be accomplished through the examination of histological patterns of the endometrium, taking into account factors such as age, phase of the menstrual cycle, and the presence of any exogenous hormones. The prevalence of pregnancy-related and dysfunctional uterine bleeding tends to be higher among younger patients, while atrophy and organic lesions tend to be more prevalent among older individuals.[2] In 2011, the International Federation of Gynaecology and Obstetrics (FIGO) introduced a nomenclature system called PALM-COEIN. This system aims to standardise the terminologies used to describe abnormal uterine bleeding (AUB). PALM-COEIN stands for Polyp, Adenomyosis, Leiomyoma, Malignancy and

Hyperplasia, Coagulopathy, Ovulatory Disorders, Endometrial factors, Iatrogenic, and Not classified. The PALM-COEIN system is a classification system that is rooted in etiopathogenesis. The acronym PALM is used to describe structural causes of abnormal uterine bleeding (AUB), while COEIN is used to denote non-structural causes of AUB. Therefore, the implementation of the FIGO nomenclature system will facilitate standardisation and uniformity in conducting future studies and address the issue of inconsistency in the management of abnormal uterine bleeding (AUB).[3] The purpose of this study was to assess the endometrial factors contributing to abnormal uterine bleeding (AUB) and to identify the distinct pathologies associated with different age cohorts.

**Material and methods**

The present study was conducted as a prospective observational study in a hospital setting. The present study consisted of a cohort of 120 individuals who exhibited a clinical diagnosis of Abnormal Uterine Bleeding (AUB). The study population consisted of patients who sought medical care at a gynaecology outpatient department and received a clinical diagnosis of Abnormal Uterine Bleeding. Additionally, these patients had undergone endometrial sampling. The study obtained approval from the institutional ethics committee. The inclusion criteria for this study consisted of patients who had isolated endometrial pathology and presented with a clinical diagnosis of abnormal uterine bleeding (AUB). The exclusion criteria encompassed patients who exhibited non-endometrial causes for abnormal uterine bleeding (AUB), such as leiomyoma, cervical pathology, and hemostatic disorders. The specimens were acquired through endometrial curettage, pipelle aspiration, or hysterectomy procedures. Among the 120 cases that were examined, 60 samples were collected from hysterectomy specimens, while the remaining samples were obtained from dilatation and curettage/pipelle cases. The age of the patients, their clinical presentation, examination findings, and details of the surgical procedures they underwent were documented based on requisition forms and hospital records. The specimens were transported to the histopathology laboratory in containers with wide openings, and they were immersed in a fixative solution consisting of 10% formalin. The gross morphology of the small biopsy specimen was assessed based on its dimensions, hue, and texture. The small biopsies were fully submitted following a minimum fixation period of 12 hours. The gross morphological characteristics of the larger specimens were documented and subsequently sectioned in a sequential manner to ensure proper preservation. Samples were collected after being fixed in formalin for a period of 24 hours. The tissue underwent processing in an automated tissue processor, resulting in the preparation of paraffin blocks. Four-micron sections were prepared by cutting and subsequently stained using the Hematoxylin and Eosin (H&E) staining method. In order to mitigate bias, two pathologists independently reviewed the slides. The histopathological patterns were categorised as follows: proliferative, secretory, menstrual, basal, atrophic, gestational, pill endometrium, disordered proliferative, endometrial hyperplasia, and endometrial carcinoma. The classification of endometrial hyperplasia has been revised to include a simplified system comprising two categories: hyperplasia without atypia and atypical hyperplasia/endometrial intraepithelial neoplasia. The data were inputted into Microsoft Excel and subjected to statistical analysis. The analysis was conducted using percentages and presented in the form of tables and figures as deemed appropriate.

**Results**

A total of 120 cases were included in this study. The age of patients ranged from 20 to 80 years (Table 1). Maximum numbers of patients were in the age group 40 -50 years (50%).

**Table 1: Age of the patients**

| Age in years | No. of patients | Percentage |
|---|---|---|
| 20-30 | 6 | 5 |
| 30-40 | 15 | 12.5 |
| 40-50 | 60 | 50 |
| 50-60 | 27 | 22.5 |
| 60-70 | 10 | 8.33 |
| 70-80 | 2 | 1.67 |

The predominant histological pattern observed was Secretory phase 28 (23.33%), Followed by Hyperplasia without atypia 26 (21.67%), Disordered proliferative 20 (16.67%), Atrophic phase 14 (11.67%), Proliferative phase 11 (9.17%), Basal endometrium 9 (7.5%), Gestational 4 (3.33%), Pill endometrium 3 (2.5%), Hyperplasia with atypia 2(1.67%) and Endometrial carcinoma 2(1.67%) and Menstrual phase 1(0.83%).

**Table 2: Endometrial pattern**

| Pattern | No. of cases | Percentage |
|---|---|---|
| Secretory phase | 28 | 23.33 |
| Proliferative phase | 11 | 9.17 |
| Basal endometrium | 9 | 7.5 |
| Menstrual phase | 1 | 0.83 |
| Atrophic phase | 14 | 11.67 |
| Gestational | 4 | 3.33 |
| Disordered proliferative | 20 | 16.67 |
| Pill endometrium | 3 | 2.5 |
| Hyperplasia without atypia | 26 | 21.67 |
| Hyperplasia with atypia | 2 | 1.67 |
| Endometrial carcinoma | 2 | 1.67 |

**Discussion**

The term "abnormal uterine bleeding" encompasses various deviations from the normal menstrual cycle, including irregularities in frequency, regularity, duration, and volume of flow, excluding instances of pregnancy. The typical duration of a menstrual cycle ranges from 24 to 38 days, with a duration of bleeding lasting between 7 and 9 days. The amount of blood loss during this time can vary from 5 to 80 millilitres. The presence of deviations in any of the four aforementioned parameters constitutes Abnormal Uterine Bleeding (AUB).[4] The International Federation of Obstetrics and Gynaecology has introduced the PALM-COEIN acronym as a valuable tool for categorising the various causes of abnormal uterine bleeding (AUB). The aetiology of abnormal uterine bleeding (AUB) encompasses various structural factors, including but not limited to polyps, adenomyosis, leiomyoma, malignancy, and hyperplasia. Non-structural factors contributing to abnormal uterine bleeding (AUB) include coagulopathy, ovulatory dysfunction, endometrial disorders, iatrogenic factors, and other unspecified causes.

Standard non-invasive diagnostic procedures were conducted to assess abnormal uterine bleeding (AUB), encompassing a complete blood count (CBC), platelet count, liver function tests (LFT), prothrombin time (PT), and activated partial thromboplastin time (APTT) in order to exclude any potential bleeding or coagulation abnormalities. Serum and urine human chorionic gonadotropin (HCG) levels were assessed in a cohort of women within the reproductive age range in order to ascertain the absence of pregnancy. Thyroid function testing (TFT) was performed due to the high prevalence of thyroid-related endocrinological conditions. The diagnostic and therapeutic procedure involved the exclusion of options D and C. Previous studies have indicated that the sensitivity of endometrial biopsy in identifying endometrial abnormalities can reach up to 96%.In this study, women who experienced abnormal uterine bleeding (AUB) and had already finished childbearing, as well as those who did not show improvement with hormonal therapy, underwent the surgical procedure known as hysterectomy. The aetiology of abnormal uterine bleeding (AUB) is influenced by the age of the patient, specifically whether they are premenopausal, perimenopausal, or postmenopausal.[6] The youngest participant in our study was a female individual aged 20, who exhibited gestational endometrium. Conversely, the oldest participant was a female individual aged 79, who displayed atrophic endometrium.

The majority of cases examined in this study exhibited typical cycling patterns of the endometrium, characterised by phases of proliferation, secretion, and atrophy. The majority of cases in the 20-30 year age group exhibited complications related to pregnancy. This phenomenon can be attributed to the fact that a significant proportion of women become pregnant within this age range. The age group of 40-50 years constituted the largest proportion (50%) of patients in our study. This study observed a notable percentage of cases exhibiting a disordered proliferative pattern, specifically 16.67%. The presence of disordered proliferative endometrium was frequently observed among individuals in the perimenopausal age range. The observed condition is characterised by a hyperplastic endometrial appearance, yet there is no concurrent increase in endometrial volume. The observed condition bears resemblance to simple hyperplasia; however, it is characterised by a focal rather than a diffuse process.In this study, the observed occurrence of disordered proliferation was found to be lower than the reported rates in the studies conducted by Bashir H et al (12.17%) and Vaidya et al (13.4%).[8,9] This phenomenon could potentially be attributed to an earlier stage of disease manifestation resulting from heightened awareness and knowledge regarding health. The timely identification and intervention contribute to the mitigation of disease advancement towards hyperplasias and carcinomas.

Another pathological pattern observed in our patient population was endometrial hyperplasia, with the majority (21.67%) being non-atypical cases, while 1.67% of cases exhibited atypia. The incidence

observed in our study was similar to that reported by Muzhafar et al, who documented a prevalence of 24.7% for endometrial hyperplasia. Additionally, Shilpa et al reported a prevalence of 24% for hyperplasia without atypia and 1.5% for hyperplasia with atypia. In contrast, Dorai swami et al reported a lower incidence of hyperplasia at 6.1%.[10,11] Parmer et al. reported a comparable lower prevalence of endometrial hyperplasia without atypia (0.05%) and with atypia (0.04%).[12]

The elevated prevalence of endometrial hyperplasia observed within our study cohort could potentially be attributed to a sedentary lifestyle, as well as the presence of various risk factors including obesity, diabetes, and a higher consumption of animal fat. It is worth noting that a significant proportion of individuals within this group also hail from a higher socioeconomic status. The prevalence of hyperplasias was found to be higher among individuals aged 40-50 years, which aligns with the findings reported by Kurman et al.[13] The identification of endometrial hyperplasia holds significant importance due to its association with the development of endometrial carcinoma. This assertion is substantiated by the research conducted by Lacey et al. and Chambian and Taylor, which revealed a higher likelihood of progression into carcinoma in cases of atypical hyperplasia.[14,15] The present study revealed that the incidence of endometrial carcinoma accounted for a mere 1.67% of the total cases examined. Anuradha et al. (year) reported a comparable occurrence rate of (1.84%).According to our study, the occurrence of endometrial carcinoma was observed within the age range of 60 to 70 years. Dangal et al. (year) reported a comparable lower prevalence of endometrial carcinoma in Nepalese women. The authors attributed this finding to the cultural practise of early childbearing and multiparity.[17]

## Conclusion

Age-related pathology is a contributing factor to abnormal uterine bleeding (AUB) of endometrial origin. The gold standard for evaluating abnormal uterine bleeding (AUB) is histopathological examination of the endometrium. The precise evaluation of endometrial sampling plays a crucial role in facilitating optimal therapeutic interventions.

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