



A STUDY ON CLINICAL PROFILE OF WOMEN PRESENTING WITH ABNORMAL UTERINE BLEEDING AT A TERTIARY CARE CENTRE IN RAJASTHAN

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ABSTRACT

Background: Abnormal uterine bleeding (AUB) is one of the most frequent gynaecological complaints encountered in outpatient settings and is a major cause of morbidity among women of reproductive age. It significantly affects physical health, quality of life, and work productivity, and often leads to anaemia. The FIGO PALM–COEIN classification system provides a standardized framework for diagnosing the underlying causes of AUB.

Objectives: To study the clinical profile of women presenting with abnormal uterine bleeding and to assess the etiological distribution of AUB using the PALM–COEIN classification system.

Methods: A hospital-based cross-sectional observational study was conducted from Jan 2023 to March 2023 in the gynaecology outpatient department of a tertiary care teaching hospital in Rajasthan. A total of 140 women aged 15–49 years presenting with abnormal uterine bleeding were enrolled using convenience sampling. Data were collected using a pre-designed, semi-structured proforma covering socio-demographic details, menstrual history, clinical profile, laboratory parameters, ultrasonography findings, and final diagnosis. Etiology was classified according to the FIGO PALM–COEIN system. Data were analysed using SPSS version 26. Descriptive statistics were expressed as frequencies, percentages, and mean $\pm$ standard deviation. The chi-square test was applied to assess associations, with $p < 0.05$ considered statistically significant.

Results: The majority of women belonged to the 35–44 years age group (40.0%) and were multiparous (67.9%). Menorrhagia was the most common presenting complaint (41.4%). Anaemia was present in over 70% of participants. Structural causes (PALM) accounted for 57.1% of cases, with leiomyoma being the most common etiology (29.3%). Among non-structural causes (COEIN), ovulatory dysfunction predominated (27.1%). Structural causes were significantly more common in women aged ≥ 35 years ($p = 0.006$).

Conclusion: Abnormal uterine bleeding is a multifactorial condition with both structural and non-structural causes. The PALM–COEIN classification system is an effective tool for systematic evaluation and management. Early diagnosis and targeted treatment are essential to reduce morbidity and improve women’s reproductive health outcomes.

Keywords: Abnormal uterine bleeding; PALM–COEIN classification; Leiomyoma; Ovulatory dysfunction; Menorrhagia Anaemia

INTRODUCTION

Abnormal uterine bleeding (AUB) is one of the most common gynaecological complaints encountered in clinical practice and constitutes a significant proportion of outpatient visits to tertiary care hospitals. It is defined as bleeding from the uterine corpus that is abnormal in volume, regularity, frequency, or duration and occurs in the absence of pregnancy [1]. AUB affects women across all age groups, from adolescence to the perimenopausal period, and has a substantial impact on physical health, psychological well-being, social functioning, and quality of life [2].

Globally, the prevalence of AUB has been reported to range between 10% and 30% among women of reproductive age, with higher prevalence observed in the perimenopausal age group [3]. In India, AUB is a leading cause of gynaecological morbidity and frequently results in anemia, reduced work productivity, repeated healthcare visits, and, in severe cases, the need for surgical intervention [4]. The burden of AUB is particularly significant in low- and middle-income countries, where delayed healthcare-seeking behavior and limited access to diagnostic facilities often complicate management. The etiopathogenesis of AUB is multifactorial and varies with age. In adolescents, anovulatory cycles due to immaturity of the hypothalamic–pituitary–ovarian axis are common, whereas in reproductive-age women, hormonal imbalance, structural uterine pathology, and systemic disorders play a major role [5]. In perimenopausal women, declining ovarian function and endometrial pathology are frequent contributors, and the possibility of premalignant or malignant conditions must always be considered [6].

To standardize the terminology and improve diagnostic clarity, the International Federation of Gynecology and Obstetrics (FIGO) introduced the PALM–COEIN classification system for AUB. This system categorizes causes into structural entities—Polyp, Adenomyosis, Leiomyoma, and Malignancy and hyperplasia (PALM)—and non-structural causes—Coagulopathy, Ovulatory dysfunction, Endometrial, Iatrogenic, and Not yet classified (COEIN) [7]. The PALM–COEIN system has been widely adopted and facilitates uniform reporting, comparison of studies, and evidence-based management.

Clinical evaluation of women with AUB involves a detailed history, thorough physical examination, and appropriate investigations such as hemoglobin estimation, pelvic ultrasonography, and endometrial sampling when indicated [8]. The clinical profile, including age, parity, bleeding pattern, duration of symptoms, and associated comorbidities, plays a crucial role in guiding diagnosis and management. Understanding the clinical spectrum of AUB is essential for selecting appropriate treatment modalities, ranging from medical therapy to surgical interventions.

Several studies conducted in different regions of India have highlighted variations in the clinical presentation and etiological distribution of AUB. Leiomyoma has been reported as the most common structural cause, while ovulatory dysfunction remains a major non-structural contributor [9]. However, the relative contribution of different etiologies varies across populations due to differences in demographic characteristics, healthcare access, and referral patterns.

Rajasthan, a large state with diverse socio-cultural and demographic characteristics, presents unique challenges in women’s health. Early marriage, high parity, nutritional deficiencies, and limited awareness regarding reproductive health contribute to delayed presentation and increased severity of symptoms among women with AUB [10]. Anemia secondary to chronic blood loss remains a common complication and significantly affects maternal health indicators in the state.

Tertiary care centres serve as referral hubs for complicated and persistent cases of AUB and provide an opportunity to study a wide spectrum of clinical presentations and etiologies. Hospital-based studies from tertiary care settings are valuable in identifying prevailing patterns of AUB, assessing diagnostic approaches, and evaluating the burden of structural versus non-structural causes [11]. Such data are essential for optimizing clinical protocols and improving patient outcomes.

Despite the high prevalence of AUB, there is limited recent literature from tertiary care centres in Rajasthan that comprehensively describes the clinical profile of women presenting with this condition using standardized classification systems. Moreover, changes in healthcare-seeking behavior and diagnostic practices in recent years underscore the need for updated evidence [12].

Therefore, the present study was conducted over a period of four months from Jan 2023 to March 2023 at a tertiary care centre in Rajasthan to evaluate the clinical profile of women presenting with abnormal uterine bleeding. The study aims to analyze demographic characteristics, clinical presentation, and etiological patterns of AUB, thereby contributing to improved understanding and management of this common gynaecological problem.

MATERIALS AND METHODS

Study Design: It was a hospital-based cross-sectional observational study.

Study Setting: The study was conducted in the Gynaecology Outpatient Department (OPD) of a tertiary care teaching hospital in Rajasthan, India.

Study Period: The study was carried out over a period of four months, from Jan 2023 to March 2023.

Study Population: The study population comprised women presenting with abnormal uterine bleeding (AUB) attending the gynaecology OPD during the study period.

Inclusion Criteria

- Women aged 15–49 years
- Women presenting with abnormal uterine bleeding, as defined by FIGO
- Women who provided written informed consent

Exclusion Criteria

- Pregnant women
- Women with bleeding due to obstetric causes
- Women with known bleeding disorders
- Women receiving hormonal treatment for AUB at the time of presentation
- Women unwilling to participate in the study

Sample Size Calculation: The sample size was calculated using the formula for estimating a proportion in a cross-sectional study ($n = Z^2 \cdot P \cdot 1 - P / d^2$). Based on previous Indian studies, the prevalence of abnormal uterine bleeding among women attending gynaecology OPD was taken as 20% ($p = 0.20$). Sample size comes to be 125. After adding 10% for possible non-response or incomplete data, the final sample size was rounded off to 140 participants.

Sampling Technique: Participants were selected using convenience sampling until the required sample size was achieved.

Data Collection Tools: Data were collected using a pre-designed, pre-tested, semi-structured proforma consisting of the following sections:

1. Socio-demographic details (age, residence, parity)
2. Menstrual history (pattern, duration, amount of bleeding)
3. Clinical profile (BMI, associated symptoms, comorbidities)

4. Laboratory findings (hemoglobin level)
5. Ultrasonography findings
6. Final diagnosis based on PALM–COEIN classification

Data Collection Procedure: Eligible participants were enrolled after obtaining written informed consent. Detailed history was taken, followed by general and pelvic examination. Relevant investigations including hemoglobin estimation and pelvic ultrasonography were recorded from case files. Endometrial sampling and histopathological findings were noted where clinically indicated.

Operational Definitions

- Abnormal uterine bleeding: Any uterine bleeding abnormal in volume, frequency, regularity, or duration, as per FIGO definition.
- Structural causes: AUB classified under PALM category.
- Non-structural causes: AUB classified under COEIN category.

Ethical Considerations: Confidentiality of patient information was maintained, and participation was voluntary. No personal identifiers were recorded.

Statistical Analysis: Data were entered into Microsoft Excel and analysed using Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics were expressed as mean $\pm$ standard deviation for continuous variables and frequencies and percentages for categorical variables. The Chi-square test was used to assess associations between categorical variables. A p value < 0.05 was considered statistically significant.

RESULTS

A total of 140 women presenting with abnormal uterine bleeding (AUB) attending the gynaecology OPD during the study period were included in the analysis. The demographic profile, clinical characteristics, investigation findings, and etiological distribution were evaluated. AUB was most commonly observed in the 35–44 years age group, reflecting the high burden of AUB in the late reproductive and perimenopausal age group, which is consistent with published literature. Table 1 shows the age-wise distribution of women with AUB.

Table 1: Age-wise Distribution of Women with Abnormal Uterine Bleeding (n = 140)

Age group (years)	Frequency	Percentage (%)
15–24	18	12.9
25–34	42	30.0
35–44	56	40.0
≥45	24	17.1

The majority of women with AUB were multiparous, suggesting a higher prevalence of AUB among women with completed or higher parity. Table 2 shows the parity-wise distribution of study participants.

Table 2: Parity-wise Distribution of Study Participants (n = 140)

Parity	Frequency	Percentage (%)
Nulliparous	16	11.4
Para 1	29	20.7
Para ≥2	95	67.9

Menorrhagia was the most common presenting complaint, followed by polymenorrhea, highlighting excessive menstrual blood loss as the predominant clinical issue. Table 3 shows the pattern of AUB.

Table 3: Pattern of Abnormal Uterine Bleeding (n = 140)		
Bleeding pattern	Frequency	Percentage (%)
Menorrhagia	58	41.4
Polymenorrhea	32	22.9
Metrorrhagia	21	15.0
Menometrorrhagia	19	13.6
Oligomenorrhea	10	7.1

More than 70% of women were found to be anaemic, indicating that chronic blood loss due to AUB is a significant contributor to anaemia. Table 4 shows the haemoglobin status among women with AUB.

Table 4: Hemoglobin Status Among Women with AUB (n = 140)		
Hemoglobin level	Frequency	Percentage (%)
≥11 g/dL	38	27.1
8–10.9 g/dL	72	51.4
<8 g/dL	30	21.5

Leiomyoma (AUB-L) was the most common cause of AUB, followed closely by ovulatory dysfunction (AUB-O), indicating a nearly equal contribution of structural and non-structural causes. Table 5 shows the distribution of AUB according to PALM-COEIN classification.

Table: Distribution of Abnormal Uterine Bleeding According to PALM–COEIN Classification (n = 140)			
Category		Frequency	Percentage (%)
PALM (Structural causes)	AUB-P (Polyp)	8	5.7
	AUB-A (Adenomyosis)	22	15.7
	AUB-L (Leiomyoma)	41	29.3
	AUB-M (Malignancy & hyperplasia)	9	6.4
Total PALM		80	57.1
COEIN (Non-structural causes)	AUB-C (Coagulopathy)	0	0.0
	AUB-O (Ovulatory dysfunction)	38	27.1
	AUB-E (Endometrial)	14	10.0
	AUB-I (Iatrogenic)	4	2.9
	AUB-N (Not yet classified)	4	2.9
Total COEIN		60	42.9
Grand Total		140	100.0

Structural causes of AUB were significantly more common in women aged ≥35 years. The association between age and PALM category was statistically significant ($p = 0.006$), emphasizing the importance

of evaluating structural pathology in older women. Table 6 shows the association between age group and structural cause of AUB (PALM).

Table 6: Association Between Age Group and Structural Causes of AUB (PALM) (n = 140)				
Age group	PALM present n (%)	PALM absent n (%)	χ^2 value	p value
<35 years (n=60)	21 (35.0)	39 (65.0)	7.62	0.006
≥35 years (n=80)	49 (61.3)	31 (38.7)		

DISCUSSION

The present study evaluated the clinical profile of women presenting with abnormal uterine bleeding (AUB) at a tertiary care centre in Rajasthan over a four-month period. The findings provide important insights into the demographic characteristics, bleeding patterns, etiological distribution, and associated clinical factors of AUB, and are largely consistent with published literature from India and other developing countries.

In the present study, the highest proportion of women with AUB belonged to the 35–44 years age group. Similar age predominance has been reported by Sharma et al. (2013) and Qureshi et al. (2013), who observed that AUB is more frequent in the late reproductive and perimenopausal age groups due to hormonal fluctuations and increasing prevalence of structural uterine pathology [4,11]. Singh et al. (2013) also emphasized that declining ovarian function and irregular ovulation in this age group contribute significantly to abnormal bleeding patterns [12]. The higher burden of AUB in this age group underscores the need for timely evaluation to rule out premalignant and malignant conditions. Parity-wise distribution in the present study showed that nearly two-thirds of women were multiparous. This finding is consistent with observations by Khrouf et al. (2014) and Nair et al. (2017), who reported higher prevalence of AUB among multiparous women [9,13]. Repeated pregnancies, uterine stretching, and increased likelihood of leiomyoma and adenomyosis may explain this association. Multiparity has also been linked with delayed healthcare seeking, leading to more severe clinical presentations.

Regarding bleeding patterns, menorrhagia was the most common presenting complaint, followed by polymenorrhea. Similar findings have been reported by Sharma et al. (2013) and Nair et al. (2017), where menorrhagia accounted for the majority of AUB cases [4,13]. Excessive menstrual bleeding significantly impacts quality of life and is a leading cause of iron deficiency anemia, which was evident in the present study as over 70% of women were anaemic. Fraser et al. (2009) highlighted that chronic heavy menstrual bleeding is one of the most important contributors to anemia and reduced work productivity in women [2].

Anemia was a prominent finding in the present study, with more than half of the participants having moderate anemia. Comparable anemia prevalence among women with AUB has been reported by Shah et al. (2021) and Singh et al. (2013), emphasizing that AUB remains a major but often under-recognized cause of chronic blood loss in women [12,14]. This highlights the importance of early diagnosis and effective management to prevent long-term complications.

Etiological classification using the PALM–COEIN system revealed that leiomyoma (AUB-L) was the most common cause, followed by ovulatory dysfunction (AUB-O). This distribution aligns with studies by Qureshi et al. (2013) and Khrouf et al. (2014), where leiomyoma was identified as the leading structural cause and ovulatory dysfunction as the predominant non-structural cause [9,11]. The nearly equal contribution of PALM and COEIN categories in the present study reinforces the utility of the FIGO classification in providing a comprehensive diagnostic framework.

A statistically significant association was observed between age and structural causes of AUB, with women aged 35 years and above showing a higher prevalence of PALM category disorders. Similar associations have been reported by Goldstein (2010) and Singh et al. (2013), who emphasized that structural pathology, including fibroids, adenomyosis, and endometrial hyperplasia, increases with

advancing age [6,12]. This finding underscores the need for thorough evaluation, including imaging and endometrial sampling, in older women presenting with AUB.

The high proportion of non-structural causes, particularly ovulatory dysfunction, in younger women is consistent with findings by Deligeoroglou et al. (2013), who reported anovulatory cycles as a common cause of AUB in adolescents and younger women [5]. This highlights the importance of individualized management strategies based on age and etiological factors.

Overall, the findings of the present study are comparable with existing literature and reaffirm that AUB is a multifactorial condition with significant clinical and public health implications. The predominance of leiomyoma and ovulatory dysfunction, high prevalence of anemia, and significant association with age and parity emphasize the need for early diagnosis, standardized classification, and timely intervention. Tertiary care centres play a crucial role in the evaluation and management of AUB, particularly in resource-limited settings like Rajasthan.

CONCLUSION

The present study provides a comprehensive overview of the clinical profile of women presenting with abnormal uterine bleeding at a tertiary care centre in Rajasthan. Abnormal uterine bleeding was most commonly observed in women aged 35–44 years and among multiparous women, highlighting the higher burden in the late reproductive and perimenopausal age groups. Menorrhagia emerged as the predominant presenting symptom, and a substantial proportion of women were found to be anaemic, emphasizing the significant impact of AUB on women's health. Leiomyoma was the most common structural cause, while ovulatory dysfunction was the leading non-structural cause, reaffirming the multifactorial nature of AUB. A significant association between advancing age and structural causes underscores the importance of thorough evaluation in older women. The study highlights the utility of the FIGO PALM–COEIN classification in systematic diagnosis and management. Early identification, appropriate investigations, and individualized treatment strategies are essential to reduce morbidity and improve quality of life among women with AUB.

Declarations

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