

# Categorization of the Causes of Abnormal Uterine Bleeding According to PALM-COEIN Classification

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## Abstract

**Introduction:** Polyp; adenomyosis; leiomyoma; malignancy and hyperplasia – coagulopathy, ovulatory dysfunction, endometrial, iatrogenic, not yet classified (PALM-COEIN) is the new classification system to categorize the causes of abnormal uterine bleeding (AUB) according to the International Federation of Gynecology and Obstetrics.

**Purpose:** To categorize 300 women with AUB presenting to the Gynaecology outpatient department (OPD) of Sri Padmavathi Medical College for Women-SVIMS according to PALM-COEIN classification system by the International Federation of Gynecology and Obstetrics.

**Materials and Methods:** It is a descriptive observational study comprising 300 women of reproductive age with AUB either in duration, volume, or in frequency for at least 3 months presenting to the OPD of Sri Padmavathi Medical College for women-SVIMS hospital, Tirupati, India, from April 2014 to March 2015. These women underwent structured history, physical and local examination, pelvic ultrasonography, and necessary investigations. Endometrial biopsy specimens were obtained for histopathology where applicable. Possible causes of the problem were categorized according to the PALM-COEIN classification system.

**Results:** Among the 4170 women attending the Gynaecology outpatient clinic, 845 (20.2%) had AUB. PALM-COEIN categorization was performed in 300 (37%) cases that showed 6 (2%) polyp, 38 (12.66%) adenomyosis, 74 (24.67%) leiomyoma, 15 (5%) malignancy and hyperplasia, 9 (3%) coagulopathy, 81 (27%) ovulatory dysfunction, 27 (9%) endometrial causes, 24 (8%) iatrogenic, and 19 (6.33%) cases were under non-specific category. Around 7 (2.34%) cases were under mixed category.

**Conclusion:** A universally accepted system of nomenclature and classification helps in the evolution of collaborative research and evidence-based application of results to clinical practice.

**Key words:** Abnormal uterine bleeding, Dysfunctional uterine bleeding, Endometrial, Menstrual disorders, Polyp; adenomyosis; leiomyoma; malignancy and hyperplasia classification

## INTRODUCTION

Abnormal uterine bleeding (AUB) is defined as bleeding from the uterine corpus that is abnormal in regularity, volume, frequency, or duration and occurs in the absence

of pregnancy.<sup>1-3</sup> It is considered as chronic if that has been present for the majority of the preceding 6 months. Moreover, it can be called acute if heavy and necessitates rapid intervention.<sup>2,3</sup> AUB affects about 5% to 15% of women of reproductive age.

Previously, words such as menorrhagia, metrorrhagia, and dysfunctional uterine bleeding were used to describe AUB.<sup>2</sup>

Because of the growing concerns and facing difficulties in designing multinational clinical trials and in interpretation of isolated research studies by using these terminologies, the need for simpler terms with clear meanings was

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recommended that have a potential to be understood by health professionals and patients alike and that can be translated into most languages.

According to the suggestion of a publication in 2007, a process was designed that leads to international agreement on terminologies and definitions that was used to describe the abnormalities of menstrual bleeding.<sup>3</sup>

Then, all the abnormalities in uterine bleeding are considered one term AUB.

In 2011, to standardize the terminology, diagnosis, and investigations of the causes of AUB, a new system for the classification of AUB as the International Federation of Gynecology and Obstetrics (FIGO) classification system was approved by the FIGO executive board.<sup>3,4</sup> An internal group of clinicians–investigators from six continents and over 17 countries contributed to it.

The classification system based on AUB etiologies includes nine categories organized under the acronym Polyp; adenomyosis; leiomyoma; malignancy and hyperplasia – coagulopathy, ovulatory dysfunction, endometrial, iatrogenic, not yet classified (PALM-COEIN).<sup>5</sup> PALM group includes five entities with structural etiologies of AUB that can be diagnosed with imaging techniques and/or histopathology PALM. COEIN group includes non-structural entities that are not diagnosed by imaging or histopathology: Coagulopathy; ovulatory dysfunction; endometrial; iatrogenic and not yet classified.<sup>4,6</sup> (Table 1)

By using this system, the possibility of contribution of more than one pathology in an individual symptomatic woman and also lack of contribution of a coincidental asymptomatic pathology toward AUB due to other causes can be recognized.

In the present study, we categorized women with AUB according to the PALM-COEIN classification system as a step toward adopting new terminologies.

**Table 1: Categories in PALM-COEIN classification**

Categories	
Structural causes	
P	Polyp
A	Adenomyosis
L	Leiomyoma
M	Malignancy and hyperplasia
Non-structural causes	
C	Coagulopathy
O	Ovulatory dysfunction
E	Endometrial
I	Iatrogenic
N	Not yet classified

PALM-COEIN: Polyp, adenomyosis, leiomyoma, malignancy and hyperplasia - coagulopathy, ovulatory dysfunction, endometrial, iatrogenic, not yet classified

## MATERIALS AND METHODS

It is a descriptive observational study conducted at the Obstetrics and Gynaecology Department of Sri Padmavathi Medical College for women-SVIMS, Tirupati, over a period of 1 year from April 2014 to May 2015.

In this study, we have taken 300 non-gravid women with age between 15 and 45 years with unpredictable, irregular, excessive duration, abnormal volume, and/or abnormal frequency of menses and intermenstrual bleeding for at least 3 months of duration coming to the outpatient department (OPD).

These patients underwent structured history, physical examination, and pelvic ultrasonography.

### Exclusion Criteria

- Women with cervical cause for vaginal bleeding.
- Pregnant women with bleeding.

Endometrium and hysterectomy specimens were obtained for histopathology, if needed.

According to the PALM-COEIN classification system, the possible causes were categorized.

Causes of endometrial hyperplasia were included under malignancy and hyperplasia category. Patients taking anticoagulants and with defects of coagulation from younger age were taken under “coagulopathy” category. Bleeding with unpredictable timing and variable amount was considered under ovulatory dysfunction. When abnormal bleeding occurred in cyclical pattern that is considered under “endometrial disorder.” In women coming under ovulatory dysfunction and iatrogenic category, no structural alteration was noted. The women with abnormal bleeding due to gonadal hormonal intake during the preceding 3 months and bleeding due to the usage of contraceptive method or device are categorized under “iatrogenic.” Women not fitting into any category were put under not yet classified category.

### Statistical Analysis

Data were analyzed by Statistical Package for Social Sciences Version 16 and descriptive statistics were presented as frequencies and percentages and bar chart.

## RESULTS

A total of 4170 women attended the Gynaecological OPD for various complaints during the study period. Of them, 845 (20.2%) presented with AUB. Of these women, 300 (37%) were included in the study. All these cases were placed in the nine categories of the

PALM-COEIN classification. Ovulatory dysfunction was the most common category ( $n = 81$ , 27%) followed by leiomyoma ( $n = 74$ , 24.67%), adenomyosis ( $n = 38$ , 12.66%), endometrial causes ( $n = 27$ , 9%), iatrogenic ( $n = 24$ , 8%), not classified ( $n = 19$ , 6.33%), malignancy ( $n = 15$ , 5%), coagulation abnormalities ( $n = 9$ , 3%), polyp ( $n = 6$ , 2%), and mixed ( $n = 7$ , 2.34%) (Table 2).

## DISCUSSION

The absence of universally accepted method for the classification of AUB has impeded basic science, clinical investigations, and practical applications of medical and surgical therapy. Hence, adoption of new terminologies in clinical practice is needed for the effective management of AUB.

The present study primarily focused on categorizing the patients of AUB according to the PALM-COEIN classification as recommended in studies such as study by Khrouf *et al.*,<sup>7</sup> Munro *et al.*,<sup>2</sup> Madhra *et al.*,<sup>8</sup> Bahamondes and Ali<sup>9</sup> so that planning, investigations, and treatment will be easier in a proper way as also recommended by PALM-COEIN classification.

We have taken women presenting to the Gynaecology OP with complaints of AUB in the present study as in a study of Qureshi and Yusuf.<sup>10</sup>

The most common causes of AUB in the present study were ovulatory dysfunction (27%) and leiomyoma (24.67%). Whereas in the study by Qureshi and Yusuf. (Table 3) also, the most common causes of AUB were leiomyoma (25%) and ovulatory dysfunction (23.6%).

Studies by Einarsson<sup>11</sup> also suggested ovulatory dysfunction as one of the main causes for AUB.<sup>12</sup>

In this study, 6.33% of the women were in not yet classified category whereas in the study by Qureshi and Yusuf, 15.6% of the women were in not yet classified category. We had 2.34% of the women in mixed category which means they were included in more than one of the PALM-COEIN categories.

## CONCLUSION

The new PALM-COEIN classification system for AUB approved by multinational group of clinicians and investigators is expected to facilitate proper and easier diagnosis of etiology and treatment of women with acute and chronic AUB.

**Table 2: Distribution of causes of AUB in the present study according to PALM-COEIN classification**

Causes of AUB	Number of patients (%)
Polyp	6 (2)
Adenomyosis	38 (12.66)
Leiomyoma	74 (24.67)
Malignancy or hyperplasia	15 (5)
Coagulopathy	9 (3)
Ovulatory dysfunction	81 (27)
Endometrial	27 (9)
Iatrogenic	24 (8)
Not yet classified	19 (6.33)

AUB: Abnormal uterine bleeding, PALM-COEIN: Polyp, adenomyosis, leiomyoma, malignancy and hyperplasia - coagulopathy, ovulatory dysfunction, endometrial, iatrogenic, not yet classified

**Table 3: Comparison of distribution of causes**

Causes of AUB	Number of patients (%)	
	Present study	Study by Qureshi and Yusuf
Polyp	6 (2)	30 (3)
Adenomyosis	38 (12.66)	150 (15)
Leiomyoma	74 (24.67)	250 (25)
Malignancy or hyperplasia	15 (5)	66 (6.6)
Coagulopathy	9 (3)	3 (0.3)
Ovulatory dysfunction	81 (27)	236 (24)
Endometrial	27 (9)	48 (5)
Iatrogenic	24 (8)	53 (6)
Not yet classified	19 (6.33)	155 (15)

AUB: Abnormal uterine bleeding

However, this system needs periodic modification and occasional substantial revision depending on advances in knowledge, technology, and increasing availability of investigations and therapeutic options across geographic regions.

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