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# Clinico-Pathological Correlation of Abnormal Uterine Bleeding in Hysterctomy Spicemens as Per Palm-Coein Classification System a Retrospective Study

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**Abstract** **Original Research Article**

Menstrual disorders, including heavy menstrual bleeding are a common complaint among women in the reproductive age group. Due to the inconsistency in the nomenclature used to describe AUB, a new classification system for causes of AUB in the reproductive years was developed which was formally accepted by Federation of Gynaecology and Obstetrics (FIGO). This system is based on the acronym PALM-COEIN (polyps, adenomyosis, leiomyoma, malignancy and hyperplasia – coagulopathy, ovulatory disorder, and endometrial causes, iatrogenic, non-classified). Though hysterectomy is still the widely accepted and practiced treatment of choice, it can be minimized using this classification system. To assess the frequency of causes (single or multiple) of Abnormal Uterine Bleeding (AUB) in hysterectomy specimens in low resource setting, a retrospective was undertaken at a tertiary care hospital.30 cases admitted to the gynaecology ward who required hysterectomy for AUB were included in the study. The clinical diagnoses were correlated with the HP findings in accordance with the PALM-COEIN classification system. The commonest indication for hysterectomy was found to be AUB-L (53.3 %) followed by AUB-O (20 %). The commonest histopathological diagnosis was leiomyoma (46 %) followed by adenomyosis (36.5 %).

**Keywords**: AUB, PALM- COIEN, Hysterectomy.



## INTRODUCTION

Menstrual disorders, including heavy menstrual bleeding are a common complaint among women in the reproductive age group, negatively affecting their health, social and professional lives. Abnormal uterine bleeding (AUB) is defined as any change in the frequency, duration or flow of menstruation. AUB is a common problem and encountered by all age groups, responsible for about 20-30% visits to outpatient department in the reproductive age group and 69% in peri or post-menopausal age group.

Due to the inconsistency in the nomenclature used to describe AUB, a new classification system for causes of AUB in the reproductive years was developed which was formally accepted by Federation of Gynaecology and Obstetrics (FIGO) [1]. This system is based on the acronym PALM-COEIN (polyps, adenomyosis, leiomyoma, malignancy and hyperplasia– coagulopathy, ovulatory disorder, endometrial causes, iatrogenic, non-classified). It was found useful for the clinical diagnosis and treatment of AUB. A number of minimally invasive surgical alternatives do exist now and are promising like endometrial ablation, thermal balloon therapy and uterine artery embolization but restricted availability and cost factor limit them from being widely used. Though hysterectomy is still the widely accepted and practiced treatment of choice, it can be minimized using this classification system [2].

The common pathological findings in AUB (on hysterectomy specimens) are leiomyomas, endometrial hyperplasia, adenomyosis, polyps and rarely endometrial carcinomas [3-5]. Our study aims to find out the frequency of these causes and correlate them with the clinical (PALM-COEIN) assessment in low resource settings.

## MATERIAL AND METHODS

After obtaining approval from Institutional Ethics Committee, a retrospective cross-sectional study

was conducted in a tertiary care hospital. 30 patients admitted in the gynaecology ward of a tertiary care hospital that required hysterectomy and fulfilling the inclusion and exclusion criteria were included in the study.

Data was collected from the case records of females who underwent hysterectomy for AUB in the study period. The gross and microscopic findings were retrieved from the histopathology records in the pathology department. Clinical findings were obtained from the patient files.

The data recorded included histopathologic findings and clinical features. The histopathologic findings were analysed so as to find out the proportion of various causes of AUB in females undergoing hysterectomy in accordance to the PALM-COEIN classification proposed by FIGO. A pathological correlation with the pre-operative diagnosis based on the clinical evaluation and radiology findings (wherever available) was done.

## STATISTICAL ANALYSIS

Entire data was tabulated and analysed using appropriate analytical skills & percentages

## RESULTS

The clinical diagnosis was based on the PALM COEIN classification system accepted by FIGO. It includes the following categories-

| | |
|---|---|
| P- Polyp,<br>A- Adenomyosis,<br>L- Leiomyoma,<br>M- Malignancy and hyperplasia | C- Coagulopathy,<br>O- Ovulatory disorder,<br>E- Endometrial causes,<br>I- Iatrogenic,<br>N- Non-classified |
| AUB – Abnormal Uterine Bleeding<br>PS- Per Speculum Examination<br>HP – Histopathology | PV- Per Vaginal Examination<br>USG- Ultrasonography |

**Abbreviation Table**

During the study period, a total of 30 hysterectomies performed for AUB were assessed. Most of the patients assessed were of the age group 35-40 years (Table 1).

**Table-1: Age wise distribution of women undergoing hysterectomy for AUB (n=30)**

| Age (in years) | Number | Percentage |
|---|---|---|
| 35-40 | 13 | 43.3% |
| 41-45 | 10 | 33.3% |
| 46-50 | 6 | 20% |
| >50 | 1 | 3.3% |

Pre-operative diagnosis made of AUB due to leiomyoma was made in 16 cases (53.33%). Ovulatory disorders in 6 cases (20%) and adenomyosis was suspected in 3 (10%) patients (Table 2).

**Table-2: Pre-operative (Clinical) diagnosis (n=30)**

| Pre-op diagnosis | Number | Percentage |
|---|---|---|
| AUB(L) | 16 | 53.3% |
| AUB(O) | 6 | 20% |
| AUB(A) | 3 | 10% |
| AUB(P) +(L) | 1 | 3.3% |
| AUB – not specified | 4 | 13.3% |

The commonest histo-pathological diagnosis made was leiomyoma in 46% cases followed by Ovulatory disorders in 26.66% cases (Table 3).

**Table-3: Spectrum of histopathological diagnosis (n=30)**

| Histopathological diagnosis | Number | Percentage |
|---|---|---|
| Leiomyoma (L) | 8 | 26.6% |
| Ovulatory disorders (O) | 4 | 13.3% |
| Adenomyosis(A) | 4 | 13.3% |
| Malignancy(M) | 2 | 6.6% |
| A+O | 4 | 13.3% |
| L+O | 2 | 6.6% |
| A+M | 2 | 6.6% |
| L+M | 1 | 3.3% |
| A+L | 1 | 3.3% |
| L+A+O | 1 | 3.3% |
| L+A+M | 1 | 3.3% |

The clinical diagnosis was based on various investigations such as Per Speculum Examination (PS), Per Vaginal Examination (PV) and Ultasonography (USG) (Transvaginal or abdominal). Most of the pre-operative (clinical) diagnoses were confirmed on histopathology. Leiomyoma was suspected in 17 cases on clinical evaluation but only 14 cases were confirmed on histopathology. Three cases which did not correlate with the HP diagnosis of leiomyoma, showed extensive adenomyosis (Table 4).

**Table-4: Correlation of clinical and histopathological diagnosis of AUB**

| Clinical Diagnosis | Number of Cases (on clinical assessment) | Investigation Findings | Histopathology Findings | Number of Cases Confirmed on HP |
|---|---|---|---|---|
| AUB(L) | 17 | PS/PV / USG - 17<br>PS/PV – (17)<br>Bulky uterus or Palpable Fibroid<br>USG – (done in 10 cases)<br>Hypo-echoic masses within the myometrium with or without cystic change or calcification | Leiomyoma | 14<br>{3 cases that were clinically diagnosed as leiomyoma were found to be adenomyosis on HP} |
| AUB (O) | 6 | USG – 4<br>Thickened Endometrium<br>Endometrial Biopsy – 2<br>Secretory Hypertrophy or Hormone Effect or Hormonal Imbalance | Secretory Hypertrophy or Hormone Effect or Hormonal Imbalance | 8{6+ 2(not clinically specified) } |
| AUB (A) | 3 | USG – 3<br>Enlarged uterus with heterogeneous myometrium and tiny hypo-echoic areas | Adenomyosis | 6{3+3(clinically diagnosed as leiomyoma) } |
| AUB (M) | Nil | USG – 2<br>Thickened Endometrium | Glandular Hyperplasia | 2{clinically not specified} |
| Not Specified | 4 | - | - | {2- diagnosed on HP as hormone effect(O)<br>2- diagnosed on HP as endometrial hyperplasia(M)} |

## DISCUSSION

Hysterectomy is a major surgical procedure which involves the total removal of uterus with or without fallopian tubes and ovaries. Hysterectomy provides definitive cure for diseases such as fibroids, adenomyosis, pelvic inflammatory disease, pelvic organ prolapse and malignancy. In the developed world, the focus for management is increasing towards minimally invasive options such as endometrial ablation, thermal balloon therapy, uterine artery embolization or levonorgestrel releasing intrauterine system, laproscopic hysterectomy or robotic surgery. However in developing countries, especially in rural areas, hysterectomy remains the treatment of choice due to late presentation at the tertiary care facility as a result of limited availability of resources along with a desire for a permanent cure at a cheaper cost.

The study was undertaken to stratify the causes of AUB based on PALM-COEIN classification and to co-relate the clinical and histopathological features so as to know the precise aetiology of AUB. PALM COEIN classification helps to classify the causes of AUB and to identify the relative proportion of each cause [6].

In this study, the patients were mostly between 35-40 years (43.3%) followed by 41-45 years (33.3%). In the study by Betha *et al*. [7], the common age group was 41-45 years and in another study by Mohammad *et al*. [2], it was 41-50 years. The transition from ovulatory cycles to menopause begins in the late 40s. There is a rise in FSH levels leading to increased ovarian follicular response and high oestrogen levels. The accelerated loss of ovarian follicles causes episode of anovulation, leading to irregular, unpredicted pattern of bleeding [7].

The commonest indication for hysterectomy was found to be AUB –L in our study (53.3%). Similar findings were noted in other studies as well. AUB-O was ranked second in our indications followed by AUB-A. Similar findings were noted in the study by Mohammed *et al*. [2].

The commonest histopathologic diagnosis of AUB in this study was found to be leiomyoma (46%). Similarly, Mishra *et al*. and others have shown leiomyoma as the most common cause of AUB [8-10]. In the study by Betha *et al*. [7], it was noted that there is an increase in incidence of fibroids with increasing age, majority of them were seen between 41-45 years. Similar findings were noted in our study as well.

In the study by Talukdar B *et al*. [5] on AUB in peri-menopausal women and correlation of sonographic findings with histopathological findings in hysterectomy specimens, it was concluded that uterine fibroid is the leading cause of AUB. It was also noted

that radiological, pathological evaluation correlated well to diagnose fibroid.

Many hysterectomy specimens showed more than one type of pathology. The commonest co-existent pathologies were AUB L, A followed by AUB L, O and AUB A, M. The findings were similar to the study by Mohammed *et al*. [2].

We found that majority of preoperative diagnoses were confirmed on histopathology. The exception was patients with AUB in who double pathologies like AUB A, O; AUB L, O and AUB A, M was found in histopathological specimens.

In the study by Koothan V *et al*. [3] on prevalence and burden of adenomyosis in hysterectomy specimen for benign AUB in a tertiary care institute, it was concluded that adenomyosis is frequent cause for failed conservative management culminating in hysterectomy, posing risk to health related quality of life of women with a bearing on emotional, physical, psychosocial, economic issues and family life.

## CONCLUSION

PALM-COEIN classification system helps us in understanding various etiological causes of AUB and can help in providing data for comparative and epidemiological studies. Leiomyoma was found to the commonest cause of AUB followed by ovulatory disorders. More studies need to be conducted for finding the causes for the increased prevalence of leiomyoma.

In spite of a number of options of medical treatment and conservative surgeries, hysterectomy still remains the widely used and definitive treatment modality for AUB in developing as well as developed countries.

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