

## SYSTEMATIC GROUPING AND CRITICAL ANALYSIS OF ABNORMAL UTERINE BLEEDING (AUB) CASES ACCORDING TO FIGO'S PALM-COEIN'S CLASSIFICATION- A RETROSPECTIVE STUDY

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### ABSTRACT

#### BACKGROUND

There is general inconsistency in the nomenclature used to describe abnormal uterine bleeding (AUB) in addition to a plethora of potential causes, which may coexist in an individual to develop consistent and universally accepted classification system to facilitate clinicians for better communication, clinical care and research.

The aim of the study is to study the analysis of AUB cases grouped under FIGO PALM-COEIN Classification System.

#### MATERIALS AND METHODS

A retrospective study of 100 women presenting with AUB admitted in Gynaecology Department, KGH, during 2015-2016 were studied. Women of reproductive, peri and postmenopausal age group presented with excessive or prolonged bleeding are analysed according to PALM-COEIN classification system.

Inclusion Criteria- AUB of reproductive, peri and postmenopausal woman.

Exclusion Criteria- Pregnancy-related complications, cervical and vaginal lesions.

#### RESULTS

In our study, most of the cases have combined causes. Structural causes- PALM group- 82%; non-structural- COEIN group- 9%, coexistent- 9%. The present study is compared with Khrouf et al, Munro et al, Madhra et al, Bahamondes and Ali. Most of the patients are in AUB-L, AUB-A and in the age group of 40-49 years (42.33%), common presenting complaint was heavy menstrual bleeding (62%). Qureshi and Yusuf in 2013, AUB-L- 25%, AUB-O -24%. Gouri et al in May 2016, AUB-O is 27% and AUB-L is 24%.

#### CONCLUSION

PALM-COEIN classification is simple and feasible and encourages focus on optimal approach to modern management, clinical teaching and research.

#### KEYWORDS

AUB, PALM-COEIN, IMB, HMB, Classification System.

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#### BACKGROUND

Abnormal uterine bleeding (AUB) is common problem among women in reproductive age. It affects 17.6% of Indian population. AUB is a common problem among women in the reproductive age. AUB may be accompanied by pain and discomfort causing significant social

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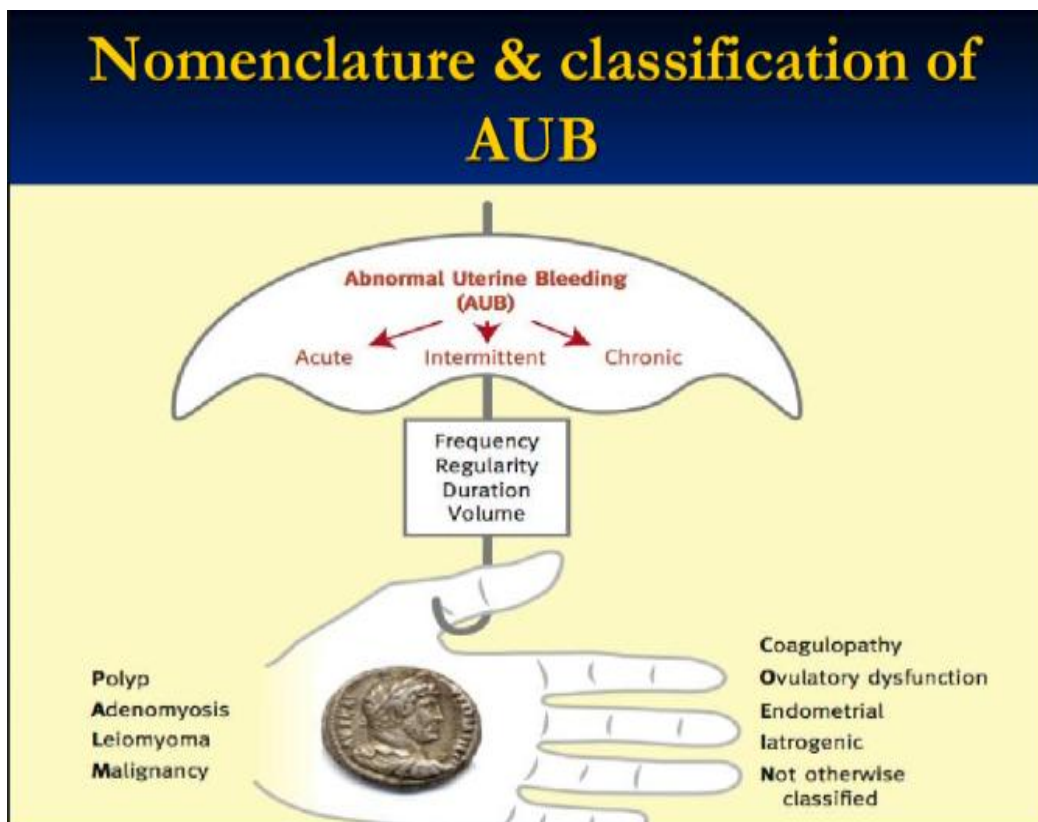
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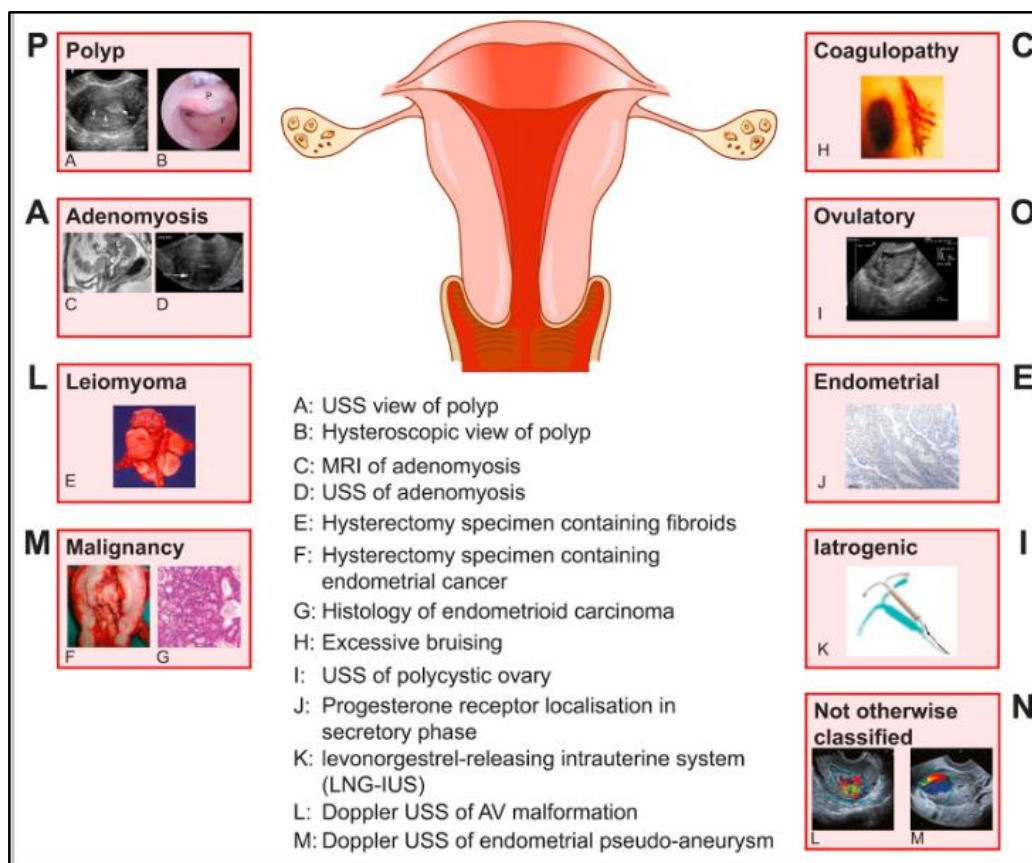
embarrassment and have a substantial effect on health related quality of life. AUB leads to loss of productivity and may result in surgical intervention including hysterectomy. Management of such common condition in a population with wide healthcare diversity requires uniform clinical practice guidelines. A unified practice guidance based on scientific evidence helps in standardising clinical management practices.

Hence, there is an urgent need for development of Indian guidelines with recommendation of good clinical practice to diagnose and manage AUB and FIGO has given a classification in 2011. Classification of AUB - 1. Acute; 2. Subacute; 3. Chronic.





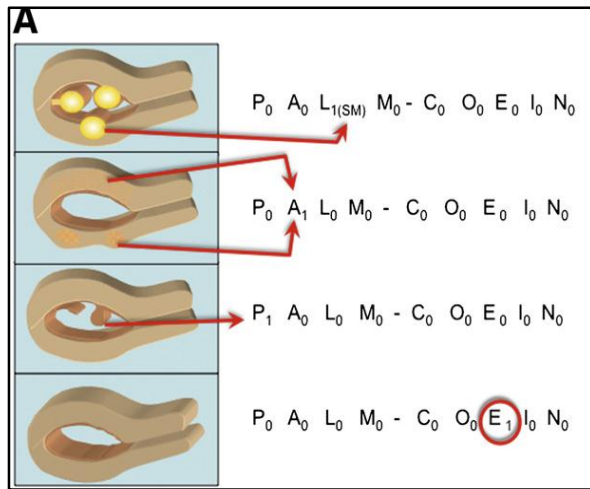
**Figure 1. Nomenclature and Classification of AUB**



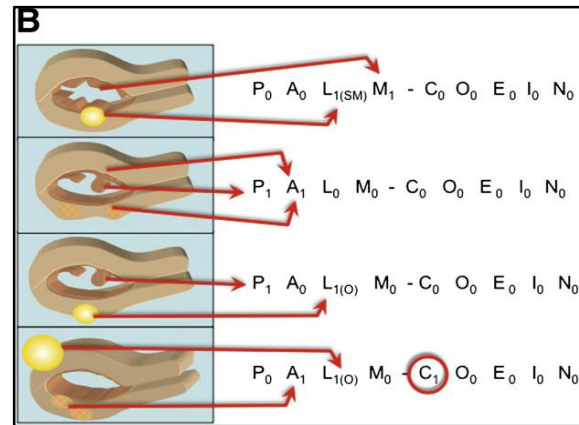
**Figure 2. PALM-COEIN Classification**

**Notation-** Each case has one identified abnormality. We will put '1' for positive feeding and 0 for negative feeding suppose the identified cause is 1 leiomyoma in submucosal region.

**P<sub>0</sub>A<sub>0</sub>L<sub>1</sub>(SM)M<sub>0</sub>-C<sub>0</sub>O<sub>0</sub>E<sub>0</sub>I<sub>0</sub>N<sub>0</sub> For Cases with One Abnormality**



**Figure 3a**



**Figure 3b**

<b>AUB</b>		<b>Disease</b>	<b>Classification</b>	<b>Investigation</b>
Polyp	P	Endometrial/endocervical	Absent/present	Imaging (USG), hysteroscopy histology
Adenomyosis	A	Endometrial tissue present 2.5 mm beyond endometrial junction		TVS/MRI
Leiomyoma	L	Primary-presence/absence Secondary-position (submucosal/others) Tertiary- limited to LSM that could be seen with hysteroscope		TVS, hysteroscope, MRI
Malignancy and hyperplasia	M	Hyperplasia- result of prolonged exposure to chronic anovulation	FIGO/WHO classification	TVS, hysteroscopic biopsy
Coagulopathy	C	Most common is von Willebrand disease, idiopathic thrombocytopenia, haemophilia		Screening using structured history of- 1. HMB- menarche. 2. One of the following- • PPH. • Surgical-related bleeding. • Bleeding with dental work.  Two or more of the following symptoms- • Bruising 1-2 times/month. • Epistaxis 1-2 times/month. • Frequent gum bleeding. • Family history of bleeding symptoms.  PT, aPTT, INR, VWF:Ag, VWF:RCOF
Ovulatory	O	Due to anovulation- LOOP events (luteal out of phase) Endocrinopathies- PCOS, hyperprolactinaemia, hypothyroidism Medication- gonadal steroid, dopamine metabolism affecting drugs		History  TVS  Sr. progesterone, thyroid screen
Endometrial dysfunction	E	Patient has predictable and cyclical bleeding typical of ovulatory cycles		Diagnosis by exclusion
Iatrogenic	I	Gonadal steroid therapy- BTB, IUCD, anticonvulsant, antibiotics, smoking		
Not yet classified	N	Chronic endometritis, AVM, myometrial hypertrophy		Doppler USG, histology

**Table 1**

Acute AUB	Where bleeding episode in a non-gravid woman required urgent intervention to stop bleeding
Chronic AUB	When AUB lasts for 3-6 months
Heavy Menstrual Bleed (HMB)	Replaces menorrhagia
Intermenstrual Bleeding (IMB)	Replaces metrorrhagia
Breakthrough Bleed (BTB)	Unscheduled bleed related to gonadal steroids

**Table 2**

**MATERIALS AND METHODS**

Based on FOGSI Guidelines

- History of bleeding pattern (frequency, regularity, excessive, prolonged) structured history of bleeding diathesis, drug and obstetric history were taken.
- Detailed physical examination including BMI, vital data, signs of hyperandrogenism and local examination done.
- Patient is asked to maintain menstrual calendar and blood loss is assessed by PBA (pictorial blood assessment chart).

**Laboratory Tests-** Pregnancy was ruled out, complete blood picture, thyroid, liver and renal function tests were done. Coagulation tests are performed in all with positive history of bleeding diathesis.

Recommendations are organised aetiology wise according to the PALM-COEIN system. They are based on clinical importance and graded (A, B, C and D) coupled with four levels of evidence<sup>1,2,3</sup> based on the quality of supporting evidence.

It is suggested to abandon the old overlapping terminology and to use PALM-COEIN.<sup>4</sup>

Classification for the diagnosis AUB (Grade A; Level 4).

It is recommended to obtain a thorough history and to conduct a physical examination to direct the need for further investigations and treatment (Grade A; Level 4). It is recommended to obtain information about the concomitant use of any medications, which may likely be the cause of AUB (Grade B; Level 4). In patients with AUB, any of the following criteria should be considered a positive screen for coagulopathies (Grade B; Level 4).

Abdominal, P/S and P/V examination (Grade A; Level 4).

Laboratory testing recommendations on laboratory testing.

Ultrasonography is mandatory in AUB to evaluate uterus, adnexa and endometrial thickness (Grade A; Level 1).

Doppler ultrasonography- In suspected arteriovenous malformation malignancy cases and to differentiate between fibroid and adenomyomas (Grade B; Level 3) (upgraded as separate point).

3D USG- For evaluating intramyometrial lesion in selected patients for fibroid mapping (Grade B; Level 4).

SIS- If intracavitary lesion is suspected and hysteroscopy is not available (Grade A; Level 1).

Hysteroscopy- For diagnosis and characterisation of intrauterine abnormalities.

**(Grade A; Level 1)**

MRI- To differentiate between fibroids and adenomyomas and for mapping exact location of fibroids while planning conservative surgery and prior to therapeutic embolisation for fibroids (Grade A; Level 3).

Endometrial Histopathology (HPE) Recommendations-

Endometrial histopathology is recommended in AUB? In women >40 years (Grade A; Level 2). ? In women <40 years who have high-risk factors for carcinoma endometrium such as irregular bleeding, obesity associated with hypertension, PCOS, diabetes, endometrial thickness >12 mm, family history of malignancy of ovary/breast/endometrium/colon, use of tamoxifen for HRT or breast cancer, late menopause, HNPCC, AIB unresponsive to medical treatment (Grade A; Level 2). Endometrial aspiration should be the preferred procedure for obtaining endometrial sample for histopathology. If endometrium is thick on imaging, but where HPE is inadequate or atrophic, hysteroscopy should be performed to rule out polyps (Grade A; Level 2). Dilatation and curettage should not be the procedure of choice for endometrial assessment (Grade A; Level 3).

**Management of Patients with AUB**

**AUB-P (Polyps)** Recommendations for management of AUB-P.<sup>5,6</sup>

Hysteroscopic polypectomy is recommended for younger women who wish to preserve fertility (Grade A; Level 1). In women, multiple endometrial polyps and not desirous of continued fertility, it is suggested to perform hysteroscopic polypectomy followed by LNG-IUS insertion after confirmation of benign lesion on histopathology (Grade A; Level 2). Polyp should be sent for histopathology. If histopathology suggests malignancy, further management should be as AUB-M.

**AUB-A (Adenomyosis)** Recommendations for management of AUB-A.<sup>5,6</sup>

For managing adenomyosis-A, it is suggested to consider the age, symptomology (AUB, pain and infertility) and association with other conditions (leiomyomas, polyps and endometriosis). In women with AUB-A, desirous of preserving fertility, but unwilling for immediate conception, progestogens especially LNG-IUS is recommended as first-line therapy (Grade A; Level 1). In patients with AUB-A, desirous of preserving fertility and resistant to LNG-IUS/unwilling to use LNG-IUS, Gonadotropin Releasing Hormone (GnRH) agonists with add-back therapy is recommended as second-line therapy (Grade A; Level 1). In patients with AUB-A and not desirous of preserving fertility, medical management using long-term GnRH

agonists and add-back therapy can be initiated. Combined oral contraceptives, danazol, NSAIDs and progestogens can be offered for symptomatic relief where LNG-IUS and GnRH agonists cannot be indicated (Grade B; Level 4). In case of failure/refusal for medical management, vaginal or laparoscopic hysterectomy is indicated (Grade A; Level 1).

#### **AUB-L (Leiomyoma)** Recommendations for AUB-L.<sup>5,6</sup>

Treatment for AUB-L should be individualised because many variables such as age, parity, symptoms, fertility desires may affect the treatment preference. Various options can be generalised as follows-

Women with intramural or subserosal myomas (grade 2-6) desirous of preserving fertility can be managed with tranexamic acid or Combined Oral Contraceptives (COCs) or NSAIDs as second-line therapy (Grade A; Level 2). Women with intramural or subserosal myomas (Grade 2-6) and desirous of preserving fertility can be medically managed with LNG-IUS if other medical treatment fails and patient is not trying to conceive for at least 1 year (Grade A; Level 1). If treatment fails or if myoma is causing infertility, myomectomy is recommended by abdominal (open or laparoscopic)/hysteroscopic route depending on myoma location (Grade A; Level 3). For submucosal myomas grade 0-1, hysteroscopic resection (for <4 cm diameter) or abdominal myomectomy (for >4 cm diameter) is the recommended treatment (Grade B; Level 4). In women above 40 years of age, not desirous of continued fertility, hysterectomy is the definitive treatment; however, medical management including LNG-IUS may be tried in small fibroids (<4 cm diameter) before undergoing definitive surgery (Grade B; Level 3). For short-term management (up to 6 months), GnRH agonists with add-back therapy is an option in perimenopausal women, prior to myomectomy or for improving general condition (Grade A; Level 1). For long-term management of leiomyomas, it is recommended to use LNG-IUS (except in AUB-L 0 and 1 grade, maybe tried in selected cases of AUB-L 2) as first-line management. Newer promising options are progesterone receptor modulators such as Ulipristal acetate and low-dose mifepristone (Grade A; Level 1), though these are presently not available in India.

#### **AUB-M** (Malignancy and endometrial hyperplasia) recommendations for AUB-M.<sup>7</sup>

In AUB-M with endometrial malignancy, standard protocol for management of malignancy should be followed (Grade B; Level 4). In AUB-M with endometrial hyperplasia with atypia, hysterectomy is the standard treatment (Grade B; Level 2). In AUB-M with endometrial hyperplasia without atypia, LNG-IUS can be considered as first-line therapy; oral progestins can be used if LNG-IUS is contraindicated or if patient is unwilling for LNG-IUS (Grade A; Level 1).

#### **AUB-C** (Coagulopathy) recommendations specific to AUB-C.<sup>5,6</sup>

In patients with AUB-C, non-hormonal treatment with tranexamic acid as primary option and hormonal treatment

with COCs/LNG-IUS as secondary option\* are recommended in consultation with a haematologist with the following considerations (Grade A; Level 2). For patients with uncontrolled uterine bleeding with above medical management, specific factor replacement where possible or desmopressin in refractory cases to be given. When surgical interventions are indicated for appropriate pre-, intra- and postoperative management of bleeding \*NSAIDs are contraindicated as they can alter platelet function and interact with drugs that might affect liver function and production of clotting factors. \*Injectables (GnRH agonists) are contraindicated except in mild coagulation abnormalities. When administered, prolonged pressure should be applied at injection site (Singh et al 2013).

#### **AUB-O** (Ovulatory dysfunction) recommendations specific to AUB-O.<sup>5,6</sup>

In women not desiring conception presently, COCs can be used as first-line therapy for 6-12 months (Grade A; Level 1). Cyclic luteal phase progestins should not be used as a specific treatment in women with AUB-O (Grade A; Level 1). Norethisterone cyclically (for 21 days) is given as initial therapy in acute episodes of bleeding for short-term management of 3 months (Grade B; Level 4). It is suggested to assess response after 1 year of medical management and judge to continue/discontinue existing therapy (Grade B; Level 4). Surgical intervention is not recommended unless there is evidence of persistent AUB or failure of medical management to alleviate the condition (Grade A; Level 4). If COCs are contraindicated or patient is unwilling for COCs, LNG-IUS is recommended if she wishes to use it for at least 1 year (Grade A; Level 1). In adolescents with AUB-O, both hormonal and non-hormonal therapies can be prescribed, (Grade A; Level 4).

#### **AUB-E (Endometrial)** Recommendations specific to AUB-E.<sup>5,6</sup>

Management of AUB-E can be similar to the management of AUB-O (Grade A; Level 4).<sup>8</sup>

#### **AUB-I (Iatrogenic Causes)** Recommendations specific to AUB-I.

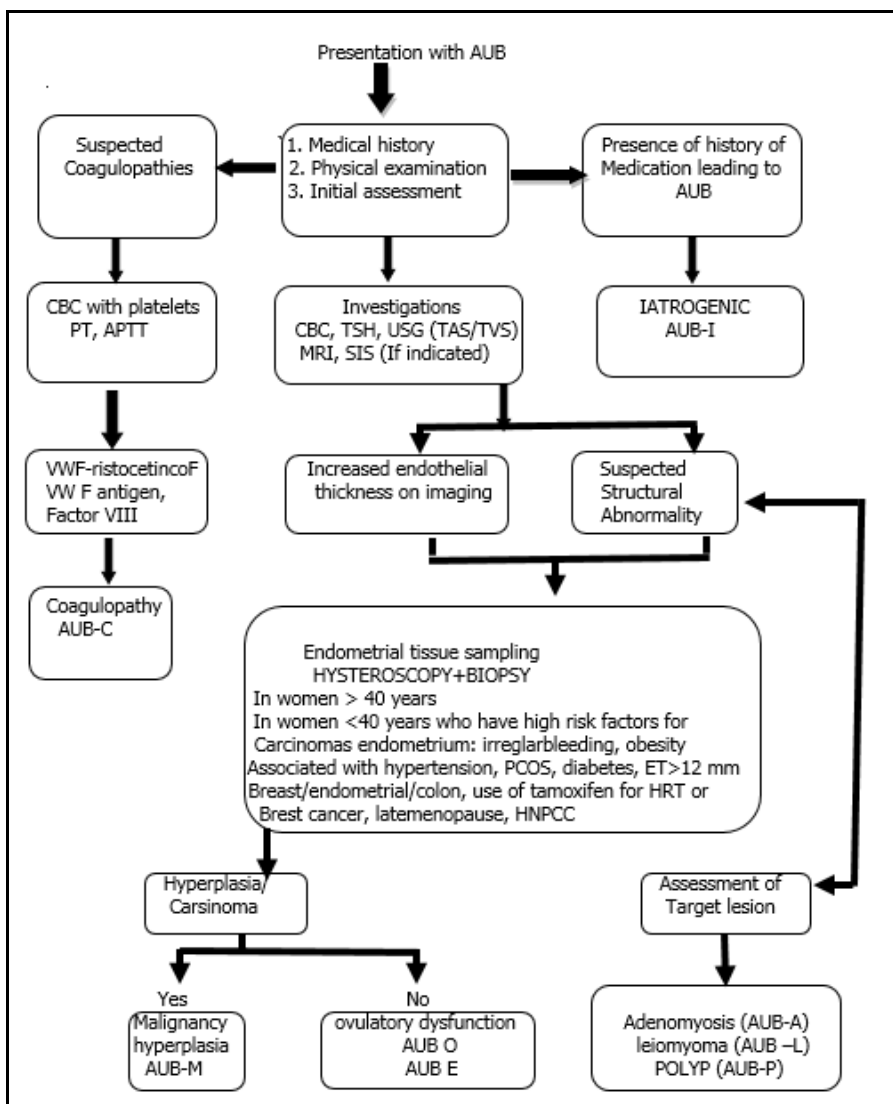
Whenever possible, medications causing AUB should be changed to other alternatives, if no alternatives are available, LNG-IUS is recommended (Grade A; Level 1).

#### **AUB-N (Not defined)** Recommendations for AUB-N.

In patients with idiopathic AUB and desire effective contraception, LNG-IUS is recommended as first-line therapy to reduce menstrual bleeding (Grade A; Level 1). In patients with AUB-N desirous of continued fertility, in whom, LNG-IUS are contraindicated, use of COCs are recommended as second line therapy (Grade A; Level 1). For the management of abnormal uterine bleeding that are mainly cyclic or predictable in timing, non-hormonal options such as NSAIDs and tranexamic acid are recommended (Grade A; Level 1). When medical or conservative surgical treatments (such as ablation) have failed or are

contraindicated and GnRH agonists along with add-back hormone therapy are recommended to reduce idiopathic AUB, while hysterectomy is suggested as last resort (Grade

B; Level 4). Uterine artery embolisation is recommended for A-V malformations.



**Table 3. Algorithm for Management of AUB Cases According to FIGO and PALM-COEIN Guidelines**

**RESULTS**

Patients were in the age group of 40-49 yrs. (n=48, 48%) (Table 4). Most common presenting complaint was heavy menstrual bleeding (n=186, 62%) (Table 4).

Table 4- Age distribution of study population age group (yrs.); Overall, n=100 (%) <20 3 (0) 20-29 -6 (6) 30-39 - 42 (42) 40-49 48 (48) >49 -4 (4).

Age In Years	20-30	30-40	40-50	>50
(N) Number of Cases (%)	06 (6)	42 (42)	48 (48)	4 (4)

**Table 4**

Distribution of study population based on presenting complaint overall n=100 (%), heavy menstrual bleeding 86 (86), irregular bleeding 47 (47), intermenstrual spotting 10 (10), frequent menses 37 (37).

Symptomatology	Heavy Menstrual Bleed	Irregular Bleed	Intermenstrual Spotting	Frequent Menses
Number of cases (Percentage)	86 (86%)	47 (47%)	10 (10%)	37 (37%)

**Table 5**

Table 6- Distribution of study population based on PALM-COEIN classification category number of patients n=100 (%) polyp (P) 12 (12); adenomyosis (A) 41 (41); leiomyoma (L) 84 (84); malignancy (M) 3 (3); coagulopathy (C) 0 (0); ovulatory dysfunction (O) 30 (30); endometrial (E) 14 (14); iatrogenic (I) 0 (0); not yet classified (N) 18 (18).

After classifying the patients according to PALM-COEIN classification, it was found that leiomyoma (n=84, 84%), adenomyosis (n=41, 41%), AUB-N (n=18, 18%), AUB-E (n=14, 14%),s polyp (n=12, 12%), malignancy 3 (Table 3).

PALM-COEIN Group	Number of Cases (%)
Polyp	12 (12)
Adenomyosis	41 (41)
Leiomyoma	84 (84)
Malignancy	3 (3)
Coagulopathy	-
Ovulatory disorders	30 (30)
Endometrial pathology	14 (14)
Iatrogenic	-
Not yet classified	18 (18)

**Table 6**

## DISCUSSION

The present study primarily focused on categorising the patients of AUB according to the PALM-COEIN classification similar to the studies done by Khrouf et al, Munro et al, Madhra et al, Bahamondes and Ali so that planning, investigations and treatment can be easier and done in a proper way. Most of the patients who presented with AUB in Gynae OPD were in the age group 40-49 years (48%) and the most common presenting complaint was heavy menstrual bleeding (86%), mixed structural causes accounts for 80% leiomyoma accounts for 84%. Second common is adenomyosis 41%. Malignancy is found in 3% of cases. Ovulatory dysfunction being 30%. Iatrogenic and coagulopathy were not found in this study.

According to the study done by Qureshi and Yusuf<sup>5</sup> in 2013, maximum patients of AUB were classified under leiomyoma category, the number being 25% followed by ovulatory dysfunction (24%). Whereas, in a study done by Gouri et al in May 2016, maximum number of patients were categorised under ovulatory dysfunction (27%) followed by leiomyoma (24.67%). Similarly, in the present study also, combined causes mostly leiomyoma with adenomyosis was found to be the most common cause.

## 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 aetiology and treatment of women with acute and chronic AUB.

However, it is recognised that this system requires periodic modification and occasional substantial revision depending on advances in knowledge and increasing availability of investigative options.

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