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## Original Research Article

# An analytical study of abnormal uterine bleeding in women of child bearing age group

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## ABSTRACT

**Background:** AUB (abnormal uterine bleeding) is defined as any variation from the normal menstrual cycle including alteration in its frequency, regularity of menses, duration of flow and amount of blood loss. In India, the reported prevalence of AUB is 17.9%. It can occur any time between menarche to menopause. A good clinician tries to recognize and identify the causative factors responsible for the disease, reverse the abnormality and induce or restore the cyclic predictable menses which should have normal volume and duration.

**Methods:** 200 cases of AUB fitting the selection criteria were taken from OPD and gynecology ward between September 2020 to June 2021.

**Results:** AUB was more common in the age group 41-45 years, that is, perimenopausal age group, more in multiparous women and women with previous surgeries on uterus and adnexa. Heavy menstrual bleeding was the most common complaint. Endometrial hyperplasia was the most common finding on ultrasound examination. Medical therapy was beneficial in some patients, rest had to undergo surgical intervention later.

**Conclusions:** Transvaginal sonography is very accurate in assessing the endometrium as well as uterus and adnexa and diagnosing their abnormalities. Medical therapy is the first line of management in most cases. Dilatation and curettage should be used along with hysteroscopy for better results. LNG-IUS gives very good result in suitable cases. Hysterectomy is the final measure if everything else fails. Vaginal hysterectomy is preferred wherever possible.

**Keywords:** Abnormal uterine bleeding, Heavy menstrual bleeding, Endometrial hyperplasia, Hysterectomy

## INTRODUCTION

Menstrual disorders are a common indication for medical visits among women of reproductive age group among which AUB is the most common condition. AUB is defined as any variation from the normal menstrual cycle including alteration in its regularity, frequency of menses, duration of flow and amount of blood loss.<sup>1</sup> AUB is further subdivided based on volume of menstruation, regularity, frequency, duration, chronicity and timing related to reproductive status.

AUB is reported to occur in 9-14% women between menarche and menopause.<sup>2</sup> In India, the reported prevalence of AUB is 17.9%.<sup>3</sup> However, the accurate prevalence is very difficult to estimate.

AUB can occur at any age in various forms and has different modes of presentation. AUB during reproductive age can result from a broad spectrum of conditions ranging from physiological process to malignant lesions involving organic, systemic and hormonal responses.

Heavy menstrual bleeding is the most common complaint of AUB. It has been defined as excessive menstrual blood loss which interferes with the women's physical, social, emotional and/or quality of life that can occur alone or in combination of other symptoms.<sup>4</sup>

AUB is a symptom and not a disease. It occurs in various forms, which may be categorized in two broad categories.<sup>5</sup> These categories are: due to organic causes; dysfunctional uterine bleeding like anovulatory and ovulatory.<sup>6</sup>

### **Acute AUB<sup>2</sup>**

An episode of bleeding in a woman of reproductive age, who is not pregnant, that is of sufficient quantity to require immediate intervention to prevent further blood loss is called acute AUB.<sup>2</sup>

### **Chronic AUB<sup>2</sup>**

Bleeding that is abnormal in duration, volume and/or frequency and has been present of most of the last 6 months is called chronic AUB.<sup>2</sup>

Earlier, increased amount, duration or flow of menses in absence of structural etiology was called dysfunctional uterine bleeding (DUB). However, after 2011, the FIGO classification system (PALM-COEIN) was published. This included DUB as a part of AUB, but not just limited to DUB. DUB affects 20-30% of all women and 12% of them are referred to gynecologist.<sup>7,8</sup>

AUB is one of the most common complaints that the patient presents with in the OPD. During transitions in the puberty to adulthood and menopause, cycles become irregular.

The key to successful clinical management is to recognize or identify the causative factors responsible. This can be achieved by clinical examination and various imaging modalities such as ultrasonography, hysterosalpingography, CT scan and MRI. The aim of the clinician was to reverse the abnormality and induce or restore the cyclic predictable menses of normal volume and duration. By operative procedure such as hysteroscopy, D and C, endometrial biopsy, hysterectomy, it was possible to do the histopathological examination. This gave the diagnosis. If all findings were normal, the clinician was left with patients of DUB.

### **Aim**

Analytical study of various etio-pathological factors responsible for AUB in women aged 15-45 years was the aim of the study.

### **Objectives**

The objectives were to study the various abnormal patterns of bleeding presenting in reproductive age group, etiology,

pre-disposing and associated factors of AUB, various histopathological changes in the uterus and their subsequent treatment in cases of AUB, to study the various treatment options available for AUB and assess the outcome and effect of each treatment modality for AUB.

## **METHODS**

200 cases of AUB were taken for our study from the department of obstetrics and gynecology in our institute between September 2020 to June 2021.

### **Study design**

The study was a prospective, analytical and observational type of study.

### **Place of study**

The study was conducted in the Sheth L. G. hospital, Maninagar, Ahmedabad.

### **Source of data**

Patients of OPD and who had been admitted in gynec ward were the source of data.

### **Time span**

The study period was from September 2020 to June 2021.

### **Study area and subjects**

The patients from OPD and who are admitted in the gynec ward, falling in the inclusion criteria were included.

### **Statistical analysis**

IBM SPSS software package version 20.0 (Armonk, NY: IBM Corp) was used for the statistical analysis.

### **Sample size**

The sample size of this study was 200 patients.

$$n = \frac{Z^2 P (1-P)}{d^2},$$

where,

n=sample size,

Z=Z statistic for a level of confidence,

P=expected prevalence or proportion (if the expected prevalence is 20%, then p=0.2),

d=precision (if the precision is 5%, then d=0.05).

### ***Inclusion criteria:***

Women aged 15-45 years with complaints of heavy menstrual bleeding, frequent menstrual bleeding, prolonged bleeding, heavy and frequent bleeding, infrequent bleeding were included in the study.

### ***Exclusion criteria***

Pregnancy and related complications, women with normal menstrual cycles, women taking drugs like anticoagulants, glucocorticoids or tamoxifen, which can cause abnormal uterine bleeding, women with pelvic inflammatory disease, women who have IUD inserted were excluded.

### ***Methodology***

Total 200 patients were recruited from gynec OPD and ward, Sheth L. G. hospital in a duration of 10 months from September 2020 to June 2021.

After taking consent from the patient, they were enrolled in the study on the basis of inclusion and exclusion criterias of the study.

After enrolment, necessary information was collected from the patients and the following tests were carried out.

Patient data included general information; chief complaint; menstrual and obstetric history; family, personal and past history; general and systemic examination; blood investigations and ultrasound.

## **RESULTS**

### ***Incidence***

The accurate incidence of AUB is difficult to establish because even the normal variation in menstrual cycle during the transition phase may be considered as abnormal bleeding by the patient.

In this study, 200 cases of AUB, that fitted the inclusion criteria were taken.

### ***Epidemiological factors influencing AUB***

Epidemiological factors that appear to be associated with AUB are parity, socio economic class, previous history of any pelvic surgeries including tubal sterilization.

Maximum number of patients were multiparous, of higher parity (75.5%), having 3 or more than 3 children.

A modified Prasad scale was used for assigning the socioeconomic class. Patients belonging to lower socioeconomic class were maximum (71%), signifying the importance of its association to AUB.

History of previous surgeries, specifically pelvis surgeries, was one of the associated factors for AUB.

Patients in our study had a total of 82 pelvic surgeries and 77 tubal sterilization operations. Tubal sterilization operations were either interval abdominal tubal ligation, postpartum tubal ligation or laparoscopic tubal ligation.

82 out of 200 patients had a history of surgical intervention of the uterus, which included caesarean section, dilatation and evacuation or curettage and sling surgery. This seemed to contribute to the occurrence of AUB.

### ***Patterns of uterine bleeding***

Heavy menstrual bleeding (48%) was the most common presentation in women. Patients presenting with heavy and frequent bleeding (29%) were next, followed by frequent bleeding (20%).

Patients with infrequent bleeding (3%) were the least. Infrequent bleeding was probably due to immature development of the hypothalamo-pituitary ovarian axis of the women in the early reproductive age group. Since the women in our study were from lower socio-economic class, they were more likely to be malnourished and anemic.

### ***Size of uterus***

Out of 200 patients with the complaint of AUB, 158 (79%) women had normal size uterus. It was significant that the size of the uterus does not correlate with AUB. This went on to saying that endometrium and the ovarian function played an equal or probably a bigger role as a causative factor in AUB.

### ***Cervical changes***

A total 155 (77.5%) patients out of 200 patients with AUB had a normal healthy cervix, while 45 (22.5%) patients had some cervical abnormality. Cervical pathology played an important role in abnormal genital bleeding. Cervical erosion was found in 20 patients and it was treated with systemic and topical antibiotics.

All 200 women underwent either transabdominal or transvaginal sonography, out of which 57 (28.5%) had no abnormality at all. USG findings of a bulky uterus in 42 (21%) patients were already clinically detected by bimanual examination. USG was very accurate in detecting endometrial abnormalities and 93 (46.5%) patients had endometrial hyperplasia while 3 (1.5%) had atrophic endometrium.

### ***Anaemia***

A total 41.5% of the women in our study were anemic, out of which 6% had severe anemia and required blood transfusion.

**Table 1: Age distribution.**

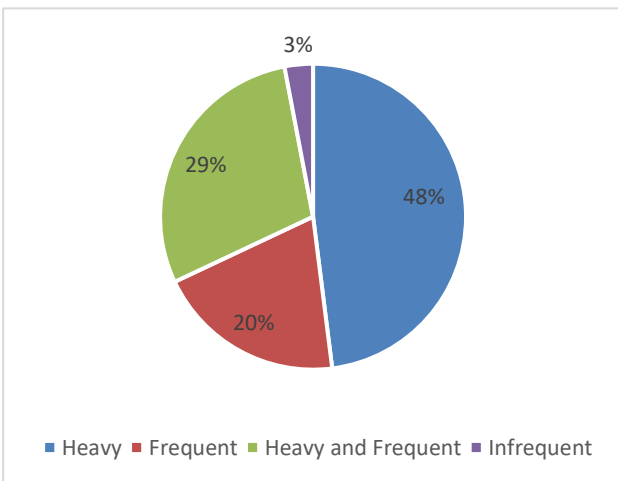
Age wise distribution (in years)	Number and % of cases
15-20	3 (1.50)
21-25	5 (2.50)
26-30	8 (4.00)
31-35	17 (8.50)
36-40	60 (30.00)
41-45	107 (53.50)
<b>Total</b>	<b>200</b>

**Table 2: Epidemiological factors influencing AUB.**

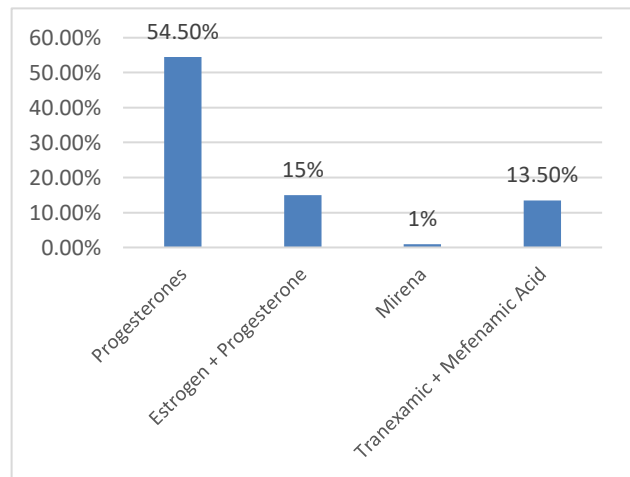
Epidemiological factors	Number and % of cases
<b>Parity</b>	
Nulliparous	13 (6.50)
1-2	36 (18.00)
3 and more than 3	151 (75.50)
<b>Socio-economic class</b>	
III	58 (29.00)
IV	142 (71.00)
<b>Surgeries</b>	
D and E	30 (15.00)
CS	51 (25.50)
Sling surgery	1 (0.50)
<b>Tubal sterilization</b>	
Current study	77 (38.50)

**Table 3: Transvaginal/transabdominal sonography findings.**

TVS/TAS findings	Number and % of cases
<b>No abnormality detected</b>	57 (28.50)
<b>Endometrial hyperplasia+atrophic endometrium</b>	93 (46.50)+3 (1.50)
<b>Fibroid uterus</b>	24 (12.00)
<b>Adenomyosis</b>	18 (09.00)
<b>Ovarian mass</b>	5 (2.50)



**Figure 1: Pattern of bleeding.**



**Figure 2: Mode of therapy.**

**Table 4: Reduction in mean blood loss after medical therapy.**

Treatments	Pre-treatment mean PBAC score	Post-treatment mean PBAC score	Present study mean reduction in MBL (%)
Long cycle progesterone (LCP)	378.54 ±7.78	234.52±104.71	63.00
Combined OC pills	360.33±10.89	188.38±100.83	65.00
Tranexamic+mefenamic acid	384.58±12.83	178.29±100.48	58.55

**Table 5: Histopathology of D and C material.**

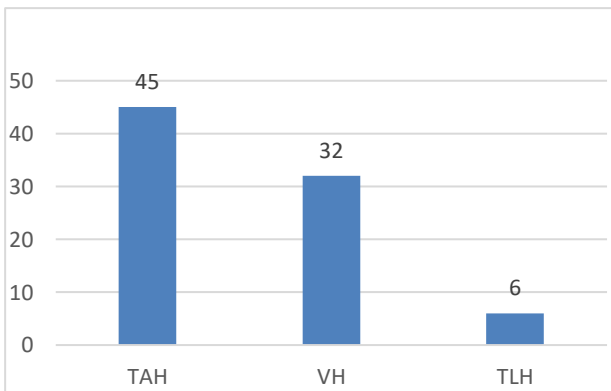
Endometrial pattern	Number and % of cases
Proliferative	65 (32.50)
Secretory	31 (15.50)
Hyperplasia	26 (13.00)
Irregular ripening	7 (3.50)
Atrophic	3 (1.50)

**Table 6: Treatment failure.**

Treatments	Total number	Patients needing hysterectomy	Percentage
Progesterones	120	56	46.66
Combined pills	30	6	20.00
TXA+MF	25	6	24.00
Mirena	2	0	0.00
D and C	132	61	46.21

**Table 7: Individual causes of hysterectomy.**

Histopathology in hysterectomy	Number and % of cases
Fibroid	24 (12.00)
Adenomyosis	18 (9.00)
Prolapse	11 (5.50)
DUB	25 (12.50)
Ovarian mass	5 (2.50)



**Figure 3: Routes of hysterectomy.**

**Mode of therapy**

Progesterones and combined OC pills were used as hormonal therapy. Tranexamic acid and mefenamic acid

combination was used as non-steroidal drug preparations in patients presenting with cyclical but heavy bleeding.

LNG-IUCD Mirena was used in patients who could afford it and did not want to get a surgery done.

Long cycle progesterone was given for 6-9 months, either medroxyprogesterone acetate 10 mg or norethisterone 5 mg.

Combined OC pills were given for 21 days for 3 months, in which 30 mg ethinyl estradiol and 0.15 mg levonorgestrel.

A combination of tranexamic acid 500 mg and mefenamic acid 250 mg was given for 5 days TDS during the first days of menses.

Endometrial sampling was done in 132 (66%) women. D and C was done in 108 patients as a therapeutic as well as

diagnostic procedure for an acute episode of bleeding and 24 patients were offered curettage for endometrial biopsy.

65 (32.5%) of the women had a proliferative endometrium, which suggested that the cycles were anovulatory. In 26 (13%) women, endometrial hyperplasia was seen indicating unopposed action of the estrogen. 3 cases of endometrial hypoplasia were also seen. In our study 32.5% women had proliferative endometrium while 13% women had endometrial hyperplasia.

By the end of 6 months, requirement for surgery for women on progesterone was around 46.66%, whereas for those women on combined OC pills was 20% and on tranexamic acid and mefenamic acid combination was 24%. This shows OC pills as being more effective for controlling AUB.

Hysterectomy was done in 46.92% women, after D and C failed to treat AUB.

In 6 cases, total laparoscopic hysterectomy was performed. Vaginal hysterectomy was preferred in cases of genital prolapse or women who required anterior colporrhaphy or perineorrhaphy along with hysterectomy.

25 (12.5%) women underwent hysterectomy for DUB which was maximum out of all the causes. This was mostly seen in the perimenopausal age group. All other causes like fibroid (12%), adenomyosis(9%) and prolapse(5.50%) have similar numbers.

## DISCUSSION

The maximum number of the patients were in the age group 41-45 years (53.5%), followed by 36-40 years (30%). This shows that AUB was more common in the early 40s and late 30s, the later spectrum of the reproductive age group.

These findings are consistent with a study done by Sun et al which showed 23.5% in the age group 46-55 years, followed by 18% in the 41-45 years age group.<sup>9</sup>

Maximum number of patients were multiparous, of higher parity (75.5%), having 3 or more than 3 children. Similar results were found by Rashida et al (57.2%).<sup>10</sup> Traditionally, it was believed that nulliparity predisposed to endometrial hyperplasia, leading to AUB.<sup>11</sup> However, our results contradicted that and showed that most patients of AUB were of higher parity.

Patients belonging to lower socio-economic class were maximum (71%), signifying the importance of its association to AUB. Rashida et al also showed similar results.<sup>10</sup>

In present study, 77 (38.5%) women had undergone tubal ligation as a method of sterilization who had the complaint of AUB. Similar results (44%) were found in a study

conducted by Sanam et al.<sup>13</sup> Letchworth et al said in his study that about 20% of women will experience heavier menses after TL.<sup>14</sup> This was probably because TL technique sometimes disturbed the ovarian blood supply leading to congestion which led to disturbance in ovarian function. This can result in menstrual disturbances in women known as the post TL syndrome.<sup>14</sup>

In a study done by Dijkhuizen et al ultrasound findings of 36% of the patients had no abnormalities while in our study 27.5% patients had the same finding. Endometrial hyperplasia atrophic endometrium was seen in 48% patients in our study, while it was 49% in his study. 15% patients had fibroid uterus in study, while in our study 12% patients had fibroid uterus.<sup>15</sup>

41.5% of the women in our study were anemic, out of which 6% had severe anemia and required blood transfusion. Moderate anemia was treated with ferrous carboxymaltose or iron sucrose as per patient's affordability, while moderate anemia was treated with oral iron preparations.

A study done by Kristen et al showed different results.<sup>16</sup> In his study, 34.2% patients had mild anemia while in our study, only 17.5% patients have mild anemia. Also, 7.2% patients in his study had moderate or severe anemia while in our study, 24% patients had moderate or severe anemia. This discrepancy could be because of the fact that our study was conducted in a rural setup, where people of lower socio-economic class, with mostly primary education and lesser affordability are present.

By the end of 6 months, 62 (31%) women, in whom D and C was done initially, had to undergo hysterectomy. 70 (35%) of the women were benefitted by medical therapy, following D and C. However, long term follow-up was essential.

According to Carlson et al 25% of patients initially treated non-surgically, underwent hysterectomy.<sup>17</sup>

In the present study, long cycle progesterone caused 63% reduction in menstrual blood loss. In a study conducted by Cameron et al it was 52% and in a study by Munro et al it was 40%.<sup>18,19</sup> Our study showed a similar result.

There had been a reduction of 65% in MBL by the use of combined OC pills. Lesser reduction was seen in other studies, that is 30% reduction in MBL in a study by Munro et al and 43% reduction in MBL in a study by Frazer et al.<sup>19,20</sup>

A remarkable difference of 58.55% in reduction of MBL was seen by the use of combination of tranexamic acid and mefenamic acid in our study. This was similar to studies conducted previously by Anderson et al 53% and Frazer et al 31%.<sup>19,20</sup>

25 (12.5%) women underwent hysterectomy for DUB which was maximum out of all the causes. This was mostly seen in the perimenopausal age group. All other causes like fibroid (12%), adenomyosis (9%) and prolapse (5.50%) had similar numbers.

In a study done by Chanderdeep et al these findings were different.<sup>21</sup> More hysterectomies were done for cases of prolapse (29%), while in our study only 5.5% hysterectomies were done for prolapse. 27% women underwent hysterectomy for fibroid in study by Chanderdeep et al while in our study only 12% underwent hysterectomy for the same.

Limitations of our study were that most of our patients were belonging to lower socio-economic class and came from a rural area. Many of them were malnourished and anaemic. Affordability and lack of education were issues for most of them.

## CONCLUSION

It is observed that AUB is more common in the perimenopausal age group, that too more in multiparous women. Surgical interventions on the uterus and adnexa like caesarean section, tubal sterilization or D and E, is a strong contributing factor to the occurrence of AUB. Heavy menstrual bleeding is the most common bleeding pattern. Medical therapy is still the first line of management in most cases of AUB. Hormonal therapy depends on the age of the patient, other risk factors and regularity of the cycle. Usually, in the later age group, progestogens are used as the first line therapy. Both progestogens and combined OC pills have similar efficacy in reduction of bleeding. COCs have the advantage of cycle regulation as well as contraception. LNG-IUS has an advantage of being reversible and has excellent results. Hysterectomy may be used as a final measure, but like with any other major surgery, it has its own complications and sequelae. Vaginal hysterectomy should be undertaken as far as possible as it is associated with less morbidity and mortality.

## Recommendations

Reducing the number of conceptions and surgical interventions may contribute to decrease in the prevalence of AUB. Trans-vaginal sonography (TVS) is a fairly effective procedure to detect the cause and hence should be used as a first line imaging procedure in all patients, when available. Proper diagnosis should be made before starting the treatment for better results. Endometrial ablation techniques can be used as an alternative to hysterectomy. They are patient friendly and reduces hospital stay.

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