

A Cross-Sectional Study of Association of Abnormal Uterine Bleeding with Body Mass Index Amongst Women Attending Gynecology OPD of Tertiary Care Hospital in South Gujarat

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Abstract

Introduction: AUB is an overarching term used to describe any departure from normal menstruation or normal menstrual cyclic pattern and characteristics. Recently obesity has been suggested a risk factor for AUB. Due to certain social and biological reasons, women of the reproductive age groups are amongst the most vulnerable to obesity. Thus in view of rising prevalence of excessive weight and obesity in women, it has become very important to investigate their effects on women's reproductive health.

Aims and Objectives: To study clinical presentation of AUB amongst women attending gynecology OPD and indoor to ward with AUB and to study association of AUB with BMI.

Materials and Methodology: All consenting women attending gynecology OPD and those who are indoor to gynecology ward with AUB (Uterine bleeding with clinically detectable organic, systemic and iatrogenic cause.) were included in study. A cross sectional study enrolled 200 consenting women who attended gynecology OPD or indoor to ward of tertiary care hospital with AUB over duration of 12 months. Data were collected by taking history, clinical examination and investigations. Height and weight were recorded and BMI was calculated. The data were analyzed by using EMI software.

Results: Amongst 200 consenting women having AUB, the most common type was uterine leiomyoma which was present in 62 women and prevalence of obesity was 25%. Statistical significance found in subjects presenting with AUB with grades of BMI.

Subjects with AUB-L had maximum numbers of subjects who were obese (34%).

Conclusion: Early diagnosis and management of obesity and appropriate life style modification should be encouraged among women of reproductive age group to reduce the incidence of AUB. Promoting healthy eating habits and maintains normal and optimum BMI should improve menstrual health.

Keywords: AUB; BMI.

Introduction

Menstrual cycle is the physiological phenomenon, consisting of cyclical shedding of endometrium, occurring on and average of 28±7 days in every women's life in response to hormones during their reproductive years. An average blood loss of 50 ± 30 ml occurs in every menstrual cycle which lasts for about 5 days, accounting to around 67 months of menstrual bleeding over a lifetime of a female.¹ Menstrual cycle is a determinant of women's health.³

The production of hormones from hypothalamus (gonadotropin-releasing hormone), pituitary (follicle stimulating hormone and luteinizing hormone) and ovaries (progesterone and androstenedione, etc.) are regulated by positive and negative feedback mechanisms. The interaction and the levels of these hormones regulate the duration and regularity of the menstrual cycles.^{1,2} The increased levels of stress

can affect the hormonal milieu, there by affecting the menstrual cycles.²

Menstrual problems are one of the most common causes of absenteeism and poor academic performance among young females, affecting their social, physical and psychological dimensions of health and carry an economic burden.

Abnormal uterine bleeding (AUB) is an overarching term used to describe any departure from normal menstruation or from normal menstrual cyclic pattern and characteristics.⁴ It is reported to occur in 9-14% of women in reproductive age groups.⁵ In India the reported incidence is 17.9%.⁶ AUB is responsible for 20% of gynecologic visits. Abnormal uterine bleeding manifests by a wide variety of bleeding problems like excessive or scanty bleeding, short or prolonged bleeding, frequent or infrequent bleeding, and it is typically random and unpredictable.⁷ Approximately 90% cases of AUB are secondary to anovulation.⁸ Association of anovulation and endometrial cancer and hyperplasia has also been strongly implicated in perimenopausal and menopausal women.

Overweight and obesity are emerging problems in India.¹⁰ It is the most prevalent form of malnutrition and is a global nutritional concern.¹¹ Due to certain social and biological reasons, women of the reproductive age are amongst the most vulnerable to obesity. The overall incidence of obesity is higher in women than in men in general. Women with obesity experience problems with special focus on reproductive health. Recently obesity has been suggested as a risk factor for abnormal uterine bleeding besides stress, eating disorders, nulliparity, PCOD, estrogen replacement therapy, etc.¹² Obesity is an important risk factor for complex hyperplasia or endometrial cancer in premenopausal women with abnormal uterine bleeding.¹³ Anovulation and resulting abnormal uterine bleeding in morbidly obese women has been shown to resolve completely after bariatric surgery.¹⁵ Similarly weight reduction in obese women has been shown to result in resumption of normal menstruation in 50% of obese with this problem.¹⁴

Thus in view of rising prevalence of excessive weight and obesity in women, it has become very important to investigate their effects on women's reproductive health and quantify the strength of their association with menstrual irregularities so that effective strategies can be devised to educate the women regarding importance of weight control and its effect on prevention of abnormal bleeding, anovulation, endometrial hyperplasia and cancer.

Aims and Objectives of the Study

1. To study clinical presentation of abnormal uterine bleeding amongst women attending gynecology outpatient department and indoor to gynecology ward with AUB.
2. To assess the body mass index of the women with AUB.
3. To study the prevalence of obesity in the study group.

Materials and Methodology

This cross sectional study enrolled 200 consenting women attending gynecology OPD and those who are indoor to gynecology ward of tertiary care hospital of South Gujarat with AUB over the duration of 12 months.

Inclusion criteria

All consenting women attending gynecology OPD and those who are indoor to gynecology ward with AUB (Uterine bleeding with clinically detectable organic, systemic and iatrogenic cause.

Exclusion criteria

All women attending gynecology OPD or indoor to gynecology ward who do not give consent.

The presenting complaints of consenting women including its origin, duration and progress along with socio-demographic parameters with age, age at menarche, socio economic status were noted. A detailed menstrual history was taken which included duration, amount of menstrual flow, frequency of periods and association with pain if any. Detailed obstetric history was taken including parity, time since last delivery and history regarding contraceptive use was also noted. Past medical history and family history were also noted. Relevant blood investigations were done like anemia profile, thyroid profile and coagulation profile and investigations needed for surgical fitness. Required women were advised for urinary pregnancy test to rule out pregnancy related causes of bleeding. Diagnosis of AUB was established and allocation to PALM-COEIN was done based on clinical history, physical examination which includes per abdomen, per speculum and per vaginal examination and other modalities like ultrasonography. Endometrial biopsy was taken in indicated cases. Body weight was calculated by taking weight of the patient in kilograms using

balance beam scale and height in meter using an attached vertical measuring scale. Body mass index (Kg/m²) was calculated for each woman as weight in kilograms divided by square of height in meters. All participants were categorized as per WHO BMI classification into underweight (BMI <18.4 Kg/m²), normal weight BMI 18.5-24.9 Kg/m², over weight (BMI 25.0-29.9 Kg/m²) which includes preobese, obese class 1, 2 and 3.

Statistical analysis: Information of cases under study is arranged in a systematic manner in MS Excel sheet. The results were recorded and tabulated. A descriptive statistics i.e. percentages and frequencies were calculated. Z test (proportion)

was applied to find the significant difference.

Observation, Discussion and Analysis

Table 1 and fig. 1 shows that majority of the study women, 31% had leiomyoma uterus followed by adenomyosis in 18.5%, anovulatory bleeding in 17%, endometrial hyperplasia and malignancy in 10%, Endometrial polyp in 9%. Iatrogenic, coagulation disorder and endometrial causes were present in 6%, 4.5% and 2% study populations respectively. 2% of study population had AUB which is not yet classified.

Table 1: Distribution of Study Women According to Palm-Coein Classification (N=200)

AUB Classification	Number (%)
AUB-P (Polyp)	18 (9.0)
AUB-A (Adenomyosis)	37 (18.5)
AUB-L (Leiomyoma)	62 (31.0)
AUB-M (Hyperplasia and malignancy)	20 (10.0)
AUB-C (Coagulopathy)	4 (2.0%)
AUB-O (Ovulatory disorders)	34 (17.0)
AUB-I (Iatrogenic)	12 (6)
AUB-E (Endometrial)	9 (4.5)
AUB-N (Not yet classified)	4 (2)

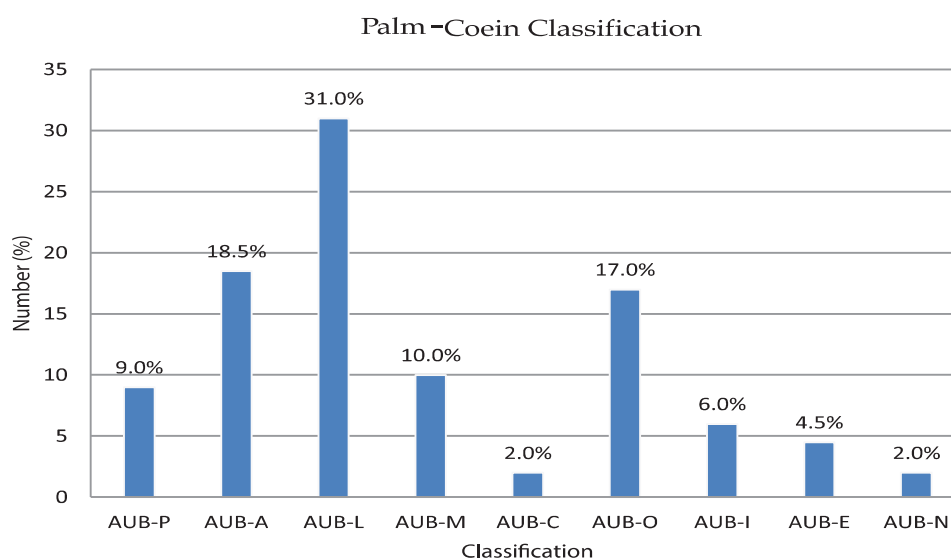


Fig. 1: Palm-Coein Classification

Table 1A: Distribution of Study Women with Aub According to Age

Palm-Coeinclassification	Adolescent	Reproductive Age	Menopausal (Menopause Attained)
AUB-P	0	18(10.9%)	0
AUB-A	0	37(22.4%)	0
AUB-L	0	62(37.5%)	0
AUB-M	0	06(3.6%)	14(82.3%)
AUB-C	3(16.6%)	1(0.6%)	0
AUB-O	14(77.7%)	20(12.1%)	0
AUB-E	0	6(6.6%)	3(17.6%)
AUB-I	1(5.5%)	11(6.6%)	0
AUB-N	0	4(2.4%)	0
Total	18	165	17

Table 2: Distribution of Study Women According to Bmi (N=200)

BMI classification kg/m ²	Number (%)
Underweight (<18.5)	7 (3.5)
Normal (18.5-24.9)	60 (30)
Pre-obese (25.0-29.9)	83 (41.5)
Class 1 obesity (30.0-34.9)	37 (18.5)
Class 2 obesity (35.0-39.9)	12 (6.0)
Class 3 obesity (>=40 kg/m ²)	1 (0.5)

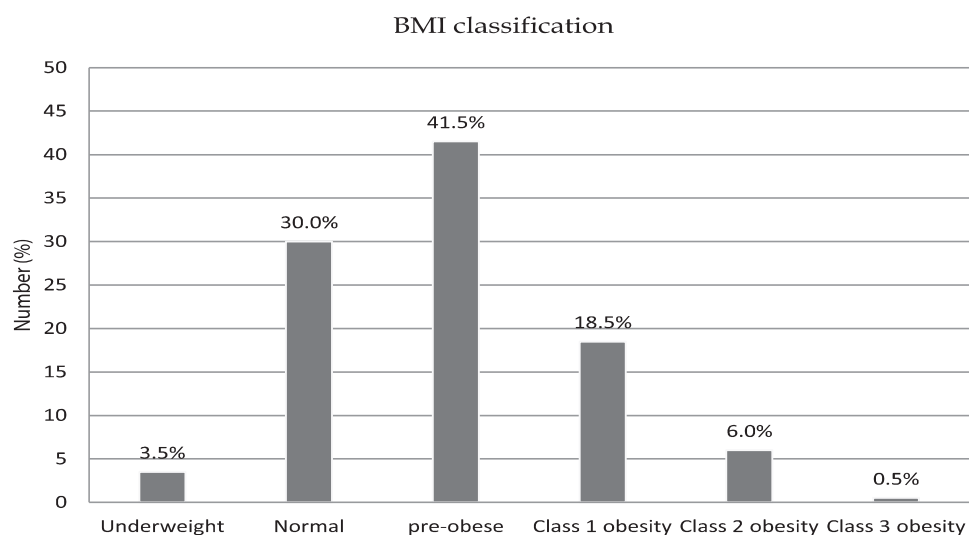
**Fig. 2:** BMI Classification

Table 3: Stastical Correlation Between Abnormal Uterine Bleeding and Body Mass Index. (N=200)

PALM - COEIN Classification	BMI classification				P value
	UW N=7	NORMAL N=60	PRE-OBESE N=83	Obese Class1,2,3 N=50	
AUB-P	0	8/13.3%	8/9.6%	2/4.0%	<0.05
AUB-A	1/14.2%	7/11.6%	20/24.0%	9/18.0%	
AUB-L	1/14.2%	18/30.0%	26/31.3%	17/34.0%	
AUB-M	1/14.8%	5/8.33%	5/6.0%	9/18.0%	
AUB-C	0	2/3.3%	1/1.2%	1/10.0%	
AUB-O	3/42.5%	13/21.6%	11/13.2%	7/14.0%	
AUB-E	0	2/3.3%	4/4.8%	3/6.0%	
AUB-I	1/14.2%	4/6.6%	5/6.02%	2/4.0%	
AUB-N	0	1/1.6%	3/3.61%	0	

Statistically significance found if p value is less than 0.05. So in current study statistical significance found as follows:

Table 1A shows that AUB due to ovulatory causes are more common (77.7%) in adolescent. AUB-L was the commonest cause (37.5%) amongst reproductive age group. In postmenopausal age group, endometrial hyperplasia or malignancy was common (82.3%) cause of AUB.

2.4% study women had AUB which is not yet classified in reproductive age group.

Table 2 and fig. 2 shows that 41.5% of study women were pre-obese, 30% of women were having normal BMI. 3.5% of study women were underweight. 18.5%, 6.0%, and 0.5% study women were having class 1, 2 and 3 obesity respectively.

Table 3 shows that difference between abnormal uterine bleeding and grades of obesity according to BMI classification, was statistically significant ($p < 0.05$). Amongst all study women, women with leiomyoma had maximum association to obesity (34%) followed by adenomyosis and AUB due to endometrial hyperplasia and malignancy accounted 18% each. AUB due to coagulation disorder is least commonly associated (10%).

Summary

Amongst the women with AUB, most common type was AUB-L which is uterine leiomyoma was Amongst adolescent 77.5% of study women had AUB due to ovulatory causes which includes puberty menorrhagia, PCOD and may be due to HPO axis immaturity. AUB-L (Leiomyoma) was more common amongst reproductive age group and AUB-M (hyperplasia and malignancy) in perimenopausal and menopausal study women.

The prevalence of obesity among study women was 25% who had BMI $> 30.0 \text{ kg/m}^2$ (obesity class 1,2 and 3) and 83% study population were pre-obese.

Statistical significance found in women presenting with AUB with grades of BMI. Women with AUB-L had maximum numbers of women who were obese (34%).

Conclusion

As this study concludes that there is a definite correlation between abnormal uterine bleeding and high BMI, there is a need to emphasize on weight reduction as a preventive measure and also as a conservative treatment for AUB. Incidence of obesity is increasing over last few years due to sedentary life style and lack of exercise. Early diagnosis and management of obesity and appropriate lifestyle modification should be encouraged among women of reproductive age group to reduce the incidence of abnormal uterine bleeding. Counseling and educating the reproductive and perimenopausal women regarding role of obesity in causing AUB and importance of exercise and physical activity as a preventive measure against AUB will help in primary prevention of AUB. Promoting healthy eating habits and maintaining normal & optimal BMI should improve menstrual health.

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