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Review Article

OBESITY AND ABNORMAL UTERINE BLEEDING (AUB)Likhitha K¹, Sannihitha CH¹, Preethi S¹¹Pharm D 4th year, Department of Pharmacy Practice, Sri Venkateshwara College of Pharmacy,
Madhapur, Hyderabad, Telangana.**Article Received:** April 2021**Accepted:** April 2021**Published:** May 2021**Abstract:**

Abnormal uterine bleeding (AUB) is one of the most common gynaecologic complaints among the reproductive age women.

Did you know that obesity also affects your menstrual cycle?

Why AUB is frequently encountered in obese women?

Obesity has been linked to everything from diabetes to heart disease. But the prominent risk is the changes in menstrual cycle and dysfunctional bleeding.

The current study is aimed to assess the status of obesity in women suffering from abnormal uterine bleeding.

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INTRODUCTION:

Rising obesity rates all over the world has a profound impact on female reproductive health. Women of reproductive age with high BMIs have a higher risk of ovulatory problems and respond poorly to fertility treatment. Obesity can aggravate the symptoms of pelvic organ prolapse (uterine prolapse), Stress urinary incontinence, and increase the risk of endometrial polyps and symptomatic fibroids.

Obesity and specific gynaecological problems Menstrual Problems

Obesity has been associated with long and irregular menstrual cycles. Women with BMI of 35 have fivefold higher risk of long cycles compared with those with a BMI between 22 and 23. Obese women with PCOS have high frequency of menstrual cycle irregularities. The relative risk of Oligomenorrhea in women with upper body fat predominance was 3.15 ($P < 0.001$) compared with women with lower body fat predominance. A cross-sectional study on 726 Australian women aged 26 to 36 years reported that the odds of having irregular cycles were 2.28 times more for women with a waist circumference greater than 88cm in comparison with women with waist circumference less than 80cm. [1]

Uterine Fibroids

Obesity has been associated with uterine fibroids. To determine whether the patients with uterine fibroids were more obese than general population, a study was conducted among 144 women who undergone hysterectomy. The study had shown that 51% of these women were obese and 16% were severely obese [2]. BMI > 25 , concurrent hypertension, occult obesity, and upper body fat distribution are associated with increased risk of fibroids. It is possible that obesity causes a hypoestrogenic state which predisposes fibroid growth.

Endometrial Polyps

The exact cause of endometrial polyps in women is not known. They tend to grow when there is increased estrogen or hypoestrogenic state in the body. Most endometrial polyps are non-cancerous. Very few can be cancerous or precancerous. The chance of cancer is higher if you are postmenopausal, on Tamoxifen (a treatment for breast cancer), or have heavy or irregular periods. Obesity was an independent predictor for development of endometrial polyps and is positively correlated with their size and multiplicity. Endometrial polyps are common in women between 20 to 40 years of age.

| Condition/treatment modality | Impact on obese women |
|--|--|
| Puberty | Earlier onset |
| Polycystic ovary syndrome | Phenotypic expression: increased |
| Anovulatory infertility | Increased [122] |
| Fertility treatment Ovulation induction | Gonadotropin requirement: increased [122] |
| Assisted conception | Gonadotropin requirement: increased [122] Oocyte number: decreased Cycle cancellation: increased Pregnancy rate: decreased Effect on live birth: uncertain |
| Early pregnancy loss | Increased |
| Contraceptive safety | Decreased |
| Contraceptive efficacy | Decreased |
| Endometrial polyps | Increased |
| Menstrual irregularities | Increased |
| Fibroids | Uncertain |
| Urinary incontinence | Increased |
| Pelvic organ prolapse | Increased |

Urinary Incontinence

A longitudinal cohort study demonstrated a strong link between BMI and urinary incontinence. Increased waist circumference was associated with stress urinary incontinence, possibly as a result of raised intra-abdominal pressure caused by central obesity. The severity of incontinence appears to be influenced by the duration of obesity. Women who had been overweight or obese since the age of 20 years were more likely to report severe incontinence than those who gained weight later in life [3]. A systemic review suggested that surgery for stress urinary incontinence in obese women was as safe, but less effective than similar surgery performed in non-obese women.

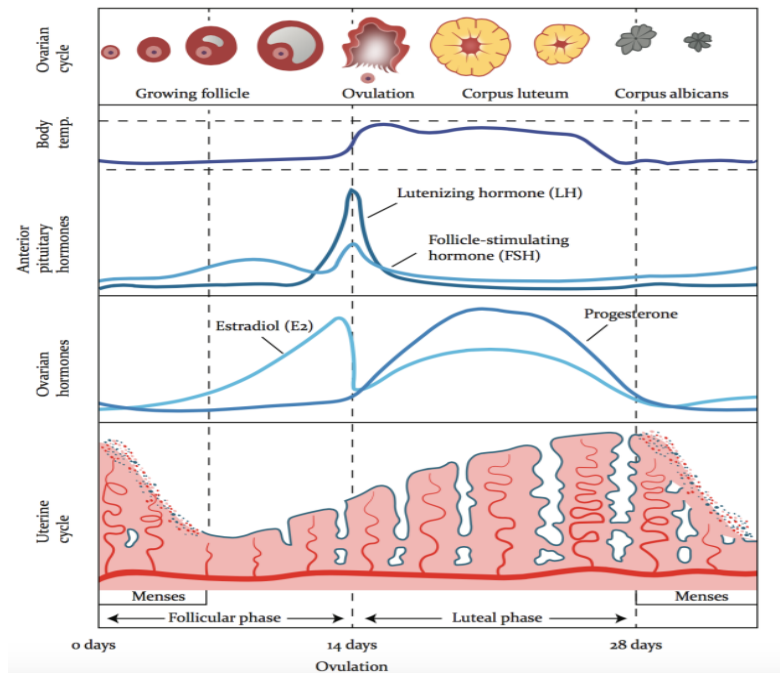
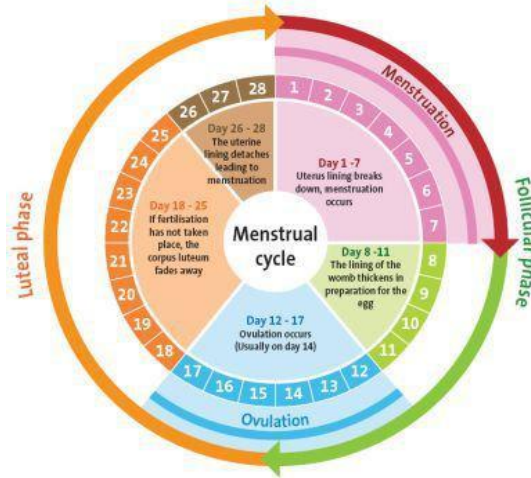
Pelvic Organ Prolapse

Elevated BMI is an important lifestyle factor affecting pelvic prolapse. The most probable mechanism of POP development among obese women is the increase in intra-abdominal pressure that causes weakening of pelvic floor muscles and fascia. The prevalence of pelvic floor dysfunction is highest (57%) in morbidly obese women with BMI > 40 and considerably higher (53%) in severely obese women with BMI > 35 compared with that (44%) in obese women with BMI > 30 . Damage to the pelvic floor caused by obesity is probably irreversible [4].

Abnormal Uterine Bleeding (AUB):

- Abnormal uterine bleeding is the principle term used to describe any deviation from normal menstrual pattern (the length, duration of flow, and amount of menstrual bleeding).

- In adolescents during early menarche, menstrual irregularities are often explained by immaturity of the hypothalamic-pituitary-gonadal axis and is normalised with increasing stability of axis [5].
- In women aged 20 to 40years, AUB may occur secondary to pregnancy, haemostatic disorders, structural pathology of the genital tract and the uterus, iatrogenic causes, infections, malignancies, hormonal disturbance and the endocrine disorders [5,6].
- Types of dysfunctional uterine bleeding:
 - Polymenorrhagia: regular cycle interval < 24 days.
 - Oligomenorrhoea: regular cycle interval > 40 days.
 - Menorrhagia: regular blood loss > 80ml or menses > 7 days.
 - Metrorrhagia: irregular bleeding.
 - Menometrorrhagia: heavy and irregular bleeding.



FIGO's Classification of Abnormal Uterine Bleeding:

- The International federation of Gynaecology and Obstetrics working group on menstrual disorders has developed a classification system called the PALM-COEIN for causes of AUB in non-gravid women.
- The PALM-COEIN (polyps, adenomyosis, leiomyoma, malignancy; coagulopathy, ovulatory disorders, endometrial, iatrogenic, not yet classified) classifies AUB based on structural versus non-structural causes.
- Initially AUB is divided into two categories [7]. The first is the heavy menstrual bleeding (HMB), which has replaced the term menorrhagia and may reach 80ml or more.
- And second is Intermenstrual bleeding (IMB), which replaces the term metrorrhagia and occurs outside of clearly defined cyclic menses.
- Once AUB has been categorised as HMB, IMB, or both, it is sub categorised into structural causes (PALM) and non-structural causes (COEIN). [7,8]

PALM-COEIN Classification System for AUB

| Cause | Abbreviation | Description |
|------------------------------|--------------|--|
| Structural (PALM) | | |
| Polyps | AUB-P | Endometrial or endocervical proliferation of tissue that is vascular, glandular, fibromuscular, or connective in nature. Prevalence: up to 12% of women |
| Adenomyosis | AUB-A | Based on depth of endometrial tissue at interface of endometrium and myometrium and measured post hysterectomy. Reported prevalence: 5%-70% |
| Leiomyoma | AUB-L | Benign fibromuscular myometrial tumor (i.e., fibroid). Further classified as <i>Submucosal</i> or <i>Other</i> . Reported prevalence: 70% |
| Malignancy | AUB-M | Atypical hyperplasia, malignancy, premalignant hyperplastic process. Further classified via WHO or FIGO system. Reported prevalence depends on the type of premalignancy or malignancy; however, up to 3.5% of premalignant polyps in reproductive-age women and 15% of endometrial cancer cases occur prior to menopause. Current prevalence may not be known, owing to new WHO classifications |
| Nonstructural (COEIN) | | |
| Coagulopathy | AUB-C | Coagulation-factor deficiencies, von Willebrand disease, hemophilia, platelet-function disorders. Reported prevalence: 13% |
| Ovulatory disorders | AUB-O | Endocrinopathies: PCOS, hypothyroidism, hyperprolactinemia, stress, obesity, anorexia, weight loss, extreme exercise. Iatrogenic: See criteria for AUB-I. Overall frequency undefined; dependent on type of disorder |
| Endometrial | AUB-E | Dysfunction of mechanisms that affect endometrial hemostasis. Endometrial inflammation and/or infection. Overall frequency undefined |
| Iatrogenic | AUB-I | Medication-related: oral and injectable anticoagulants, intrauterine systems, gonadal steroid therapy (estrogen, progestin, androgen), medication affecting dopamine metabolism (phenothiazines, tricyclic antidepressants), herbals (ginseng, ginkgo), decreased medication adherence. Overall frequency undefined |
| Not yet classified | AUB-N | Chronic endometritis, arteriovenous malformations, myometrial hypertrophy, any future entities not yet identified or defined. Overall frequency undefined |

AUB: abnormal uterine bleeding; FIGO: International Federation of Gynecology and Obstetrics; PCOS: polycystic ovarian syndrome; WHO: World Health Organization.
Source: References 1, 7-10.

What are the causes of AUB?

Every woman's period (menstrual cycle) is different.

- On average, a woman's period occurs every 28 days, and usually lasts 4 to 7 days.
- Women in their 40s may start to have their period less often or have the interval between their periods decrease.
- For most women, the hormone levels of estrogen and progesterone released as part of ovulation process change every month.
- AUB can occur when the ovaries do not release an egg. And the changes in the hormone levels cause your period to be later or earlier.
- In many women, AUB is caused by hormone imbalance. It can also occur due to following causes;
 - Thickening of the uterine wall or the lining.
 - Uterine fibroids
 - Uterine polyps
 - Bleeding disorders or problems with blood clotting.
 - Polycystic ovarian syndrome.
 - Birth control pills or intrauterine devices.
 - Excessive weight gain or loss (more than 10pounds or 4.5kg).
 - Infection of uterus or cervix.

Obesity as a risk factor for Abnormal Uterine Bleeding (AUB)

Obesity plays a vital role in the etiology of menstrual problems. Obesity is associated with early puberty, aberrant menstrual cycles, decreased contraceptive efficacy, increased miscarriage and ovulatory disorders.

Why obese women are generally seen with Abnormal Uterine Bleeding?[12]

The link between obesity and AUB is complicated. Estrogen is responsible for uterine bleeding, when the endometrium sheds during menses. Not only through ovaries, estrogen is also produced in the fat cells in our bodies. More fat cells translate to more estrogen, a thicker uterine lining and thus the heavy unusual bleeding.

- Body weight gain and increase in adipose tissue and fat in the central region of the body disturb the balance of steroid hormones.
- Prolonged endometrial exposure to unopposed estrogen in absence of sufficient progesterone; can lead to endometrial hyperplasia that can progress to cancer form.
- Obesity is also associated with an increase in leptin and a decrease in adiponectin levels in the circulation. Leptin inhibits ovarian folliculogenesis and as well as the luteinizing hormone (LH).
- The circulating leptin levels are closely related to the percentage of body fat and also correlate

with body mass index (BMI) in patients with normal weight, obesity and diabetes.

Obesity was assessed using calculation of BMI and waist circumference.

Higher BMI was associated with AUB. Methods: In an observational case series study, 20 consecutive women with the final diagnosis of AUB referred from 2009 to 2011 were evaluated. Obesity was assessed using BMI and waist circumference.

Results: Mean waist circumference was 102.95 ± 9.77 cm in the range of 90 to 119 cm, with respect to BMI measurement the mean BMI was 32.63 ± 3.34 kg/m², range between 26.92 and 39.06, that 2/3rd of studied women suffered from overweight and other 1/3rd cases were obese.[9]

Although etiology is not completely understood, the current studies suggest that;

- Obesity could disturb the hypothalamic – pituitary-gonadal axis. In this respect increased metabolism of sex steroids within adipose tissue depots could decrease the circulating sex hormone binding globulin (SHBG) levels with higher bio-available sex steroid levels.
- It may change the plasma concentration of androgens and estrogens that potentially lead to irregularities in the reproductive axis and the AUB.[10]

Recent studies have introduced body fat distribution as more valid criterion for determining obesity than BMI

This is because the BMI is influenced by a lot of factors such as Age, sex, race, etc and is considered inappropriate to determine obesity. In women a BMI of 25 to 34.9 kg/m² and a waist circumference >35 inches indicate increased visceral fat storage. Menstrual duration has a significant relationship with weight, circumference of waist, hip, arm.

It has been reported that excessive weight is an important factor for uterine cramps during menstruation and increases the likelihood of prolonged pain [10]. Heavy menstrual bleeding (HMB) was the most prevalent disorder (15%) among the women. This disorder is one of the most serious conditions that may provoke or exacerbate anaemia and could eventually be life-threatening if left untreated. In non-pregnant women, the levonorgestrel-releasing intrauterine system (LNG-IUS) is considered as first line therapy for HMB, with combined oral contraceptives as second choice [13]. Also, some adolescents with persistent

menstrual abnormalities may suffer from PCOS- a prevalent endocrinopathy in age group (13-21 years).

Methods:

There is a cross-sectional study. The research project was approved by the ethics committee of research deputy of Kashan University of medical sciences [11]. Sampling was conducted in 2016. Inclusion criteria for the study included female students living at a dormitory, without any known genital tract diseases, having no pain throughout the cycle and previous abdominal or pelvic surgery. Exclusion criteria were composed of the use of oral contraceptives and intrauterine devices (IUD). By considering inclusion and exclusion criteria, a total of 250 students were studied.

RESULTS:

Results revealed that the minimum age of participants was 18 and the maximum age was 25 with an average of 21.2 ± 1.5 . Menstrual periods <21 days were observed in 2 participants (0.8%) and menstrual periods longer than 35 days in 15 patients (6%). 32 participants (12.8%) had menstrual bleeding beyond 7 days.

Regular menstrual cycles were seen in 230 participants (92%). And 249 (99.6%) were experienced by dysmenorrhoea.

Table 1 shows the mean and standard deviation of menstrual characteristics.

The table 2 below presents the association between the duration of menstrual bleeding and the anthropometric indicators of obesity. According to this table, menstrual duration has a significant relationship with weight, and the circumference of waist, hip and arm. Also, there was a significant relationship between menstrual duration and waist-to-height, waist-to-hip, hip-to-height, and arm-to-height ratios.

And the table 3 shows the multiple linear regression analysis (MLRA), where the duration of menstrual bleeding was considered as a dependent variable. Excluded variables from the model were: arm, waist, thigh circumference, hip to arm ratio, waist to height, waist to hip, arm to thigh, and also other variables excluded are weight, BMI, voluntary weight loss and having severe stress in the last 6 months (all $P > 0.05$). According to this test, hip circumference, waist-to-weight ratio, hip to waist, arm to weight, hip to thigh, and arm to height ratios are taken as predictors.

Table 1: Mean and standard deviation of some menstrual characteristics in students

| Variable | Mean±SD | Minimum–maximum |
|------------------------------|-------------|-----------------|
| Menarche age (year) | 13.39±1.32 | 10-18 |
| Menstrual cycle length (day) | 6.56±1.30 | 3-10 |
| Menstrual cycle interval | 30.13±13.59 | 17-230 |

SD=Standard deviation

Table 2: The relationship between duration of menstrual bleeding and obesity-related anthropometric index students

| Anthropometric indicators | Mean±SD | Minimum–maximum | r* | P |
|---------------------------|------------|-----------------|-------|--------|
| Weight | 56.09±8.78 | 32.20-81.60 | -0.18 | 0.003 |
| BMI | 21.43±3.16 | 15.11-29.94 | -0.15 | 0.015 |
| Waist circumference | 74.85±8.62 | 52.00-104.00 | -0.16 | 0.010 |
| Hip circumference | 93.96±6.55 | 74.00-115.00 | -0.18 | 0.003 |
| Arm circumference | 24.51±2.71 | 18.00-34.00 | -0.22 | <0.001 |
| Thigh circumference | 46.98±4.78 | 35.00-62.00 | -0.20 | 0.002 |
| Waist to height ratio | 0.46±0.05 | 0.34-0.65 | -0.13 | 0.031 |
| Hip to thigh | 1.99±0.16 | 0.20-2.37 | -0.20 | 0.002 |
| Hip to height | 0.57±0.05 | 0.06-0.72 | -0.15 | 0.014 |
| Arm to height | 0.52±0.03 | 0.44-0.63 | -0.19 | 0.002 |
| Waist-to-weight ratio | 1.34±0.13 | 0.99-1.72 | 0.08 | 0.189 |
| Waist-to-hip ratio | 0.82±0.43 | 0.66-7.78 | 0.05 | 0.349 |
| Waist-to-thigh | 1.59±0.14 | 1.28-2.12 | -0.01 | 0.963 |
| Hip to waist | 1.25±0.11 | 0.13-1.52 | 0.01 | 0.864 |
| Hip to arm | 3.84±0.32 | 0.39-4.79 | 0.08 | 0.174 |
| Arm to weight | 0.44±0.03 | 0.36-0.57 | 0.03 | 0.577 |
| Arm to thigh | 0.52±0.03 | 0.44-0.63 | -0.06 | 0.303 |

*The correlation coefficient using Pearson's correlation test (n=250).

BMI=Body mass index, SD=Standard deviation

Table 3: Results of multiple linear regression with backward strategy assessing the relationship between duration of menstrual bleeding with underlying predictors

| Variables | B | SE | β | P |
|-----------------------------|--------|-------|-------|-------|
| Hip circumference | -0.09 | 0.03 | -0.61 | 0.005 |
| Hip circumference to height | 9.49 | 4.83 | 0.37 | 0.051 |
| Waist-to-weight ratio | -23.51 | 8.34 | -2.33 | 0.005 |
| Hip to waist | -23.75 | 8.73 | -2.13 | 0.007 |
| Arm to weight | 65.97 | 24.88 | 1.88 | 0.009 |
| Hip to thigh | 16.17 | 5.57 | 2.02 | 0.004 |
| Arm to height | -60.29 | 21.33 | -1.60 | 0.005 |
| Anemia | -0.39 | 0.23 | -0.10 | 0.100 |
| Taking anti-inflammation | 0.57 | 0.16 | 0.21 | 0.001 |
| Hypothyroidism | 0.79 | 0.40 | 0.11 | 0.051 |

Excluded variables from the model: Arm to thigh, arm, waist, menstrual regularity, thigh, using painkillers, hip to arm, using heat, waist to thigh, menarche, waist to height, weight, BMI, waist to hip, voluntary weight loss, and severe stress in the last 6 months (all *P* values >0/05). Hip circumference, waist-to-weight ratio, hip to waist, arm to weight, hip to thigh, and arm to height are predictors. Dependent variable: Duration of menstrual bleeding. SE = Standard error, BMI = Body mass index

How best to manage Abnormal Uterine Bleeding? [14,15]

Irregular or unusually heavy periods are a common complaint. Most often the condition is benign and can be managed conservatively. Differential diagnosis is made.

The initial approach to evaluate abnormal bleeding is a thorough history and physical examination. Ask about stress, dietary habits, exercise, medications, headache, weight loss or gain, galactorrhoea, palpitations, abdominal symptoms, excessive hair growth.

In post-menopausal women, to rule out cancer; first begin with pelvic examination where sound waves are used to make a picture of pelvic organs. And others like endometrial biopsy, sonohysterography, Magnetic resonance imaging (MRI) and computed tomography (CT) are done. Risk factors for endometrial polyps include greater than 40yrs of age, hypertension, diabetes, infertility, or if the patient was on oestrogen medication. Look for genital tract pathology, uterine fibroids, and polyps, iatrogenic causes like medications or radiations and presence of any systemic infection. A complete blood count (CBC) and thyroid stimulating hormone (TSH) levels will help to rule out anaemia, leukaemia, thrombocytopenia, and thyroid disorders.

Once the genital tract pathology, systemic disease, and iatrogenic causes are ruled out; you are left with dysfunctional uterine bleeding. It includes both ovulatory (structural abnormalities) and anovulatory causes such as hypothalamic suppression, eating disorders, thyroid disorders, pituitary adenoma, adrenal disorders, and PCOD.[16] Anovulatory cycles are more common than ovulatory and occur in 90% of patients with AUB.

Based on the cause, what treatment options are recommended?

If the source of abnormal bleeding is an anatomic abnormality such as endometrial polyp, removing the polyp under hysteroscopy guidance should alleviate the problem. And if bleeding is due to any systemic disease or medications, withdrawal of the medication or treating the systemic disorder will cross out the problem. Based on the age, symptoms, and severity of the disease condition, the patients are provided with the medical (hormonal or non-hormonal) or the surgical procedures.

MEDICAL TREATMENT:

The treatment is very effective and response is variable in different women. Drugs used commonly in the treatment of DUB are:

ESTROGENS

Oestrogen therapy is rarely used in the treatment of DUB. In cases where bleeding has been prolonged and there is insufficient tissue for progestin action, oestrogen therapy is indicated for rapid growth of endometrium. In patients with acute or heavy bleeding, 25mg of conjugated estrogen is administered intravenously every 4 hours until the bleeding is under control by direct effect on coagulation, including the increased fibrinogen and platelet aggregation [17]. After the course of estrogen therapy, a treatment cycle of low-dose oral contraceptives is indicated to avoid the future episodes of dysfunctional uterine bleeding. In case of lesser bleeding, as seen with long-term use of oral contraceptives, depo progestin therapy (Depo-Provera), or Norplant contraceptive, 1.25mg of conjugated estrogen, or 2mg estradiol orally for 7-10 days are preferentially used.

PROGESTOGENS

Monthly administration of a progestational agent is used to regularize the endometrial shedding and to protect against the development of endometrial cancer. Most women with normal menstrual cycles will have occasional anovulatory cycle resulting in DUB. These women can be treated with a single course of progesterone, i.e 10mg of medroxyprogesterone acetate for 5 to 10 days. IUD-releasing levonorgestrel (for 5 years) induces endometrial atrophy. Local delivery of progestational agents by way of an IUD has the potential to provide long-term therapy for patients with chronic bleeding unresponsive to other therapies [18]. In properly selected obese women with AUB, the levonorgestrel intrauterine system (LNG-IUS) is an effective therapy in approximately 75% of the cases.

LOW-DOSEORAL CONTRACEPTIVES

In cases of young anovulatory women when there is prolonged, unopposed endogenous estrogen stimulation of endometrium, heavy bleeding takes place. A low-dose (less than 50µg estrogen) oral contraceptive can be very effective in controlling the bleeding both in acute and in chronic conditions. Two pills daily for 5-7 days are given even though a decrease in flow is seen only in 12-24 hours. The patient may be advised that ensuing withdrawal, bleeding may be heavy with cramping because of the endometrial build up.

ANDROGENIC STEROIDS

Danazol used in doses of 400-800mg daily reduces menstrual blood loss. It shows multiple mechanisms of action.

- Binding to androgen, progesterone, and glucocorticoid receptors producing both antagonistic and agonistic action.
- Binding to sex-hormone binding globulin (SHBG), increasing the free testosterone.
- Prevention of mid cycle follicle-stimulating hormone and luteinizing hormone surges with no significant suppression of basal follicle stimulating hormone and luteinizing hormone. These combined effects produce a low estrogen environment that does not support growth of the endometrium.[22]

GONADOTROPIN-RELEASING**HORMONE ANALOGS**

Gonadotropin-releasing hormone analogs suppress gonadotropin secretion from the pituitary gland and subsequently lower serum estradiol levels. The ultimate effect of GnRH analogs is a cessation of menstruation. Effective in reducing the blood loss, they can only be used for a 6-month period because of the loss in bone mass and expense to the patient.

ANTI-PROSTAGLANDINS (NSAIDS)

Eg: Mefenamic acid

NSAIDs inhibit the action of cyclo-oxygenase, decrease in prostaglandin synthesis. These are most effective when given for 7-10 days before the expected onset of menstruation in ovulatory DUB patients [19]. But they are started with onset of menses and continued throughout the bleeding episode with good success. They may be of greatest benefit in ovulatory DUB. Along with tranexamic acid, it reduces the symptoms of dysmenorrhoea.

ANTIFIBRINOLYTICS

Eg: Tranexamic acid

These are the second line agents, used either alone or in combination. They act as potent inhibitors of fibrinolysis and have shown to reduce the menstrual blood loss by 50%.

DESMOPRESSIN:

Desmopressin has been used to treat abnormal uterine bleeding in patients with coagulation disorders [22]. After administration, a rapid increase in coagulation factor-8 occurs that lasts approximately for 6 hours. The agent is limited to acute administration.

METFORMIN:

The role of metformin in weight loss has been widely debated. The treatment resulted in a significant

decrease in BMI compared with a placebo. There is also an improvement in menstrual patterns with metformin therapy in women with insulin resistance.

SURGICAL PROCEDURES:

The need for surgical treatment is based on the clinical stability of the patient, the severity of bleeding, contraindications and patients lack of response to the medical treatment, and the underlying medical condition.

Surgical option includes dilation and curettage (D&C), endometrial ablation, uterine artery embolization, and hysterectomy. Specific treatments such as hysteroscopy with D&C, polypectomy, or myomectomy may be required if structural abnormalities are suspected as the cause of acute AUB. Endometrial ablation should be considered only if other treatments have been ineffective or are contraindicated and should be performed only when a woman does not have plans for future childbearing and when possibility of endometrial cancer has been ruled out as the cause of the acute AUB.

Hysterectomy, the definitive treatment for controlling heavy menstrual bleeding (HMB), for patients who do not respond to medical therapy.

Bariatric surgery [20, 21]: It includes a variety of procedures performed in obese women.

Bariatric surgery such as gastric bypass (open or laparoscopic), gastric sleeve, and gastric banding, work by changing the anatomy of the gastrointestinal tract or by causing different physiologic changes in the body that change your energy balance and fat metabolism. Patients may lose 30-50% of their excess weight in the first 6 months, and 77% as early as 12 months after surgery. Following bariatric surgery, morbidly obese women have improved fertility and reduced risk of obstetric complications, such as gestational diabetes, macrosomia, and hypertensive disorders of pregnancy.

CONCLUSION:

Our study concludes that there is a strong association between obesity, high body mass index (BMI), and the abnormal uterine bleeding. Therefore, weight reduction should be considered as conservative treatment beside the other surgical approaches. Abnormal uterine bleeding is a common problem encountered in primary care practice. Age is an important factor in study of AUB because bleeding may occur at any age between menarche and menopause but AUB in perimenopausal age always requires close analysis in order to differentiate it from

more severe bleeding caused by uterine malignancy. Weight control by reducing the intake of total fats and sugars, proper nutrition, promoting healthy eating habits, engaging in regular physical activity and maintaining the optimal BMI should improve menstrual health. Improving menstrual health prevents problems such as dysmenorrhoea, PCOS, hyperlipidaemia, obesity, and infertility. Moderate weight reduction of 5-10% has been shown to reduce the risk of comorbidities and encourage resumption of ovulation in anovulatory women. Patient counselling and educating the obese women and general population regarding the obesity as risk factor in pathophysiology of AUB and taking preventive measures against it is necessary.

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