

# CHAPTER 6

## ABNORMAL UTERINE BLEEDING

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### 1. INTRODUCTION

Abnormal uterine bleeding (AUB, also referred to as menstrual bleeding irregularities) is the abnormality of menstrual bleeding in terms of quantity, frequency and pattern. The reproductive and postmenopausal periods are the most common reasons for admission to the gynecology outpatient clinic and negatively affect women's physical, psychological, emotional and sexual quality of life (1,2).

Abnormal uterine bleeding is an important health problem in women that can lead to loss of productivity and increase in healthcare costs (3). The International Federation of Gynecology and Obstetrics (FIGO) created the PALM-COEIN classification system in 2011 to collect the etiologies of AUB under one title. PALM is used to group structural causes, while COEIN is used to classify non-structural causes. The purpose of this classification is to eliminate the ambiguity by gathering AUBs in a terminology (4).

Although some reasons that play an organic, endocrinological, autoimmune, immunological, metabolic and structural role in the etiology of abnormal uterine bleeding have been revealed, the cause of bleeding is not known clearly in the vast majority of patients. The patient group in whom organic, structural, immunological and endocrine causes cannot be found is defined as dysfunctional uterine bleeding (DUB) (5).

#### 1.1. Normal Menstrual Cycle

The term menstruation is used to express the physiological shedding of the endometrium until menopause, which is seen as a menstrual bleeding every 21-28 days. The time between two bleeding periods is called the menstrual cycle.

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Menstrual bleeding is the only bleeding that represents a normal physiological process in the human body. The menstrual cycle is under the control of the neuroendocrine system and is a cycle that takes place under the influence of the hypothalamo-pituitary-ovarian axis (6-11).

Problems such as infertility, recurrent pregnancy loss, and malignancy may occur due to changes in menstrual cycle physiology in cases of menstrual cycle that go out of their normal pattern (12). Any bleeding seen in menstrual cycle disorders can be expressed as abnormal uterine bleeding. The normal limits of the menstrual cycle are shown in Table 1.

<b>Table 1. Normal limits of the menstrual cycle</b>		
<b>Menstrual Definition</b>	<b>Terminology</b>	<b>Normal Limits (5p-95p)</b>
Frequency of bleeding (Day)	Frequent	<24
	Normal	24-38
	Rare	>38
<b>Menstrual Pattern</b>		
Variability in 12 months (Day)	None	No bleeding
	Regular	Variability +/- 2-20 day
	Irregular	Variability >20 day
Bleeding time (Days)	Prolonged	>8.0
	Normal	4.4-8.0
	Shortened	<4.5
Monthly Bleeding Volume (mL)	Dense	>80
	Normal	5-80
	Rare	<5

In order for menstrual bleeding to be normal, physiological events must occur in a certain order:

1. Gonadotropin-releasing hormone (GnRH) secreted from the hypothalamus should be pulsatilely secreted.
2. Gonadotropin hormone should be secreted from the pituitary gland to activate the ovaries with GnRH stimulation.
3. The enzymatic reactions required for the presence of sufficient number of follicles in the ovaries to respond to gonadotropins and for the production and secretion of estradiol in the ovaries must occur in the follicles.
4. Endometrial tissue should be able to respond to the necessary hormonal stimuli.

5. The anatomical structure of the genital system should be suitable for the out-flow of menstrual blood and there should be no conditions that would prevent blood circulation (13,14).

The hypothalamo-pituitary-ovarian axis is shown in Figure 1.

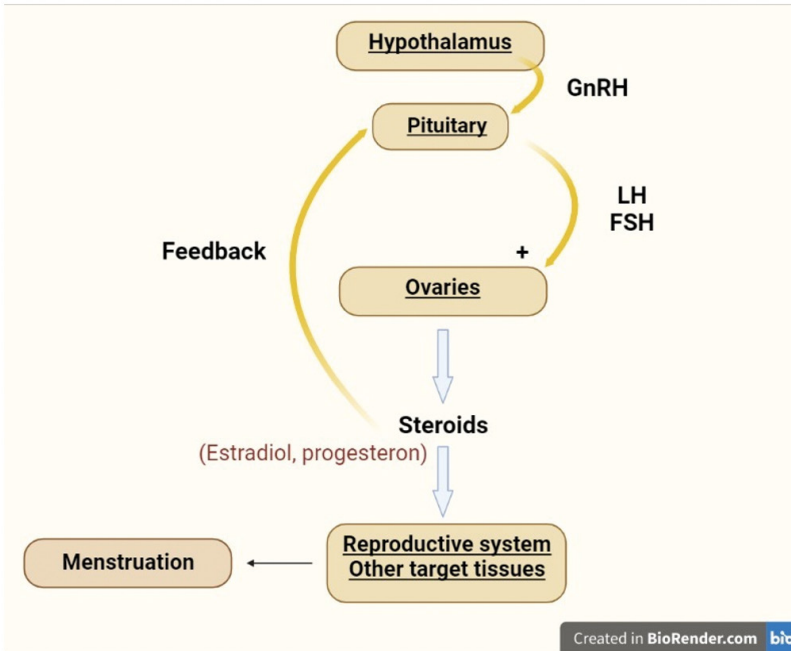


Figure 1. Hypothalamo-pituitary-ovarian axis (13,14)

### 1.1.1. Abnormal Uterine Bleeding

Changes in the amount, duration, and timing of menstrual bleeding are defined as abnormal uterine bleeding (15). A normal menstrual cycle has a frequency of 24-38 days. It takes 7-9 days with a loss of 5 to 80 mL of blood. Variations in any of these 3 parameters constitute abnormal uterine bleeding (16-19).

In 2011, the PALM-COEIN classification was made by FIGO and the Menstrual Disorders Group (FMDG) to classify the term AUB in women of reproductive age who were not pregnant (20-24).

While PALM is used to group structural causes (polyp, adenomyosis, leiomyoma, malignancy and hyperplasia), COEIN is used to classify non-structural causes (coagulopathy, ovulatory dysfunction, endometrial, iatrogenic,

not otherwise classified). The purpose of this classification is to eliminate the ambiguity by gathering AUBs in a terminology. The American College of Obstetricians and Gynecologists (ACOG) also accepts this classification (4). Other causes of bleeding must be excluded in order to diagnose AUB (25).

### **1.1.2. Classical Terminology**

Concepts such as menorrhagia, metrorrhagia, menometrorrhagia, hypermenorrhea, polymenorrhea and DUB are used in order to identify the symptoms, signs and causes of AUB (26).

Terminology-specific classification of abnormal uterine bleeding is made according to bleeding frequency, volume changes, and prolongation and shortening of bleeding time.

#### **Bleeding Frequency**

**Polymenorrhea:** It is the term used for regular cycles in which bleeding occurs more frequently than 21 days.

**Oligomenorrhea:** It refers to cycles longer than 35 days.

#### **Change in Bleeding Amount**

**Hypermenorrhea:** It is used for regular bleeding with a bleeding amount of more than 80 mL and occurring at certain periods.

**Hypomenorrhea:** It means that the bleeding is less than 30 mL in regular periods in normal menstrual cycles.

#### **Prolongation or Shortening of Bleeding Time**

**Menorrhagia:** It is bleeding in which the amount of bleeding is more than 80 mL, lasting longer than 7 days and occurring in regular periods.

**Metrorrhagia:** It refers to continuous bleeding that occurs in the form of irregular periods.

**Menometrorrhagia:** It is bleeding in the form of excessive and irregular cycles.

**Amenorrhea:** Absence of menstrual bleeding for more than six months or for 3 consecutive cycles.

**Ovulation bleeding:** It is bleeding in the form of spotting, which occurs in the middle of the menstrual cycle with the effect of the rapid decrease in estrogen level before ovulation occurs.

**Postmenopausal bleeding:** It refers to bleeding occurring 12 months after the last menstruation (26).

### ***1.1.3. Classification of Abnormal Uterine Bleeding***

Abnormal uterine bleeding causes are examined under two headings as organic and non-organic causes.

#### **i) Organic causes**

- Reproductive system diseases
  - Pregnancy complications (abortion, ectopic pregnancy)
  - Benign diseases (polyp, infection, myoma uteri, adenomyosis)
  - Genital system malignancies
  - Foreign body, trauma
- Systemic diseases
  - Coagulopathies (von-Willebrand disease, idiopathic thrombocytopenic purpura, factor deficiencies)
  - Endocrine diseases (hypothyroidism, hyperprolactinemia)
  - Chronic liver and kidney diseases
- Pharmacological / iatrogenic causes
  - Hormonal drugs (OCS, HRT)
  - Psychiatric drugs

#### **ii) Non-organic causes**

- Dysfunctional uterine bleeding
  - Ovulatory
  - Anovulatory

### ***1.1.4. Dysfunctional Uterine Bleeding***

Bleeding without any medical pathology and most of which is caused by anovulatory cycles is defined as DUB (27).

The origin of this concept is based on Schroder's form of methropathia hemorrhagica (28). In the literature, the term DUB has been used instead of AUB where there is no systemic or local structural cause. The term DUB is not included in the new PALM-COEIN classification.

### 1.1.5. FIGO's Palm-Coein Classification

PALM-COEIN (polyp, adenomyosis, myoma uteri, malignancy and hyperplasia, coagulopathy, ovulatory dysfunction, endometrial, iatrogenic, unclassifiable) classification made to classify the term AUB is schematized in Figure 2.

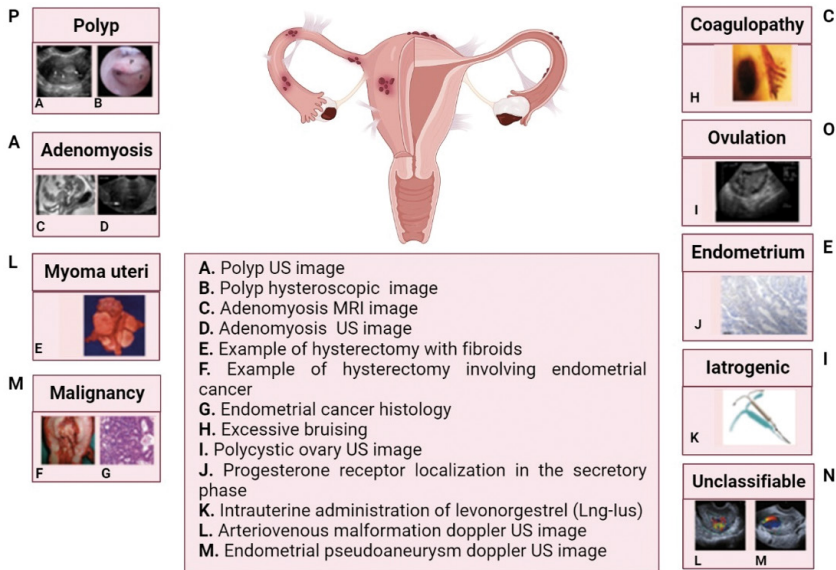


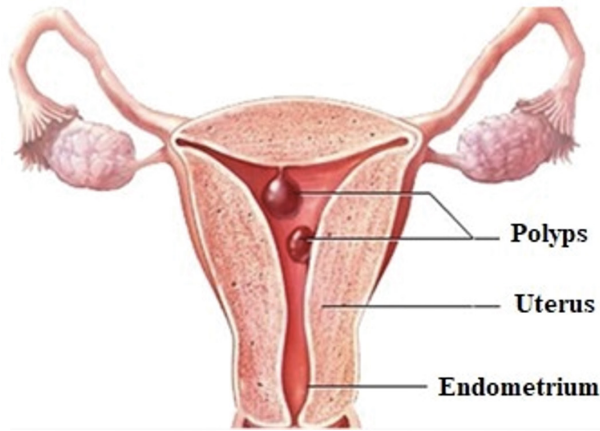
Figure 2. Classification of AUB according to FIGO (29)

In this definition, in addition to the etiology, the bleeding patterns were also regulated. It has been suggested to use the terms “intermenstrual bleeding” instead of metrorrhagia and “severe menstrual bleeding” instead of menorrhagia. It was deemed appropriate to remove the term “DUB”, for which no structural reason could be found (30). The first changes to the terminology were published in 2007. Terminology was updated again in FIGO 2011 and 2018. In the new terminology, the presence of prolonged, irregular, excessive bleeding from the uterus, which has been present for most of the month for the last six months, is expressed as chronic AUB. In addition, severe bleeding episodes that require intervention to prevent possible blood loss are defined as acute AUB (31).

#### Polyp (AUB-P)

Endometrial polyp is an epithelial proliferation containing glandular, vascular, and connective tissue. Most of them show no symptoms. It is often benign, but

a small proportion may be atypical and/or malignant (32). Diagnosis can be made by applying ultrasonography (USG) and/or hysteroscopy (H/S) methods without making a histopathological diagnosis (33). Some of the polyps detected by transvaginal USG can be confused with submucous fibroids (34-37). The polyp image is schematized in Figure 3.



**Figure 3.** Uterine polyps

### ***Adenomyosis (AUB-A)***

Adenomyosis may be focal or diffuse but difficult to detect in the presence of leiomyomas (38). Since the diagnostic criteria vary, its contribution to AUB is not fully understood, but better diagnosis can be made by radiological methods (39,40).

Although the diagnosis of adenomyosis can be made using methods such as ultrasonography or magnetic resonance imaging (MRI), ultrasonographic diagnostic criteria (the combination of the myometrial echo and the endometrial-myometrial area with a diffusely heterogeneous image that cannot be distinguished, the presence of anechoic lacuna and/or cyst, the presence of focal abnormalities in the myometrial echo) and uterus having a globular and/or asymmetrical appearance) was considered appropriate (20,41,42).

### ***Myoma uteri (AUB-L)***

Because myoma uteri can be in different locations, in various sizes and numbers, the PALM-COEIN classification has been classified as primary, secondary and tertiary (19-22, 41). This classification is shown in Figure 4.

In classification,

1. The relationship of myoma uterus with endometrium and serosa,
2. Its location in the uterus (upper/lower segment, cervix, anterior, posterior or lateral),
3. The number and size of the lesions,
4. Existing classification systems are considered (42- 44).

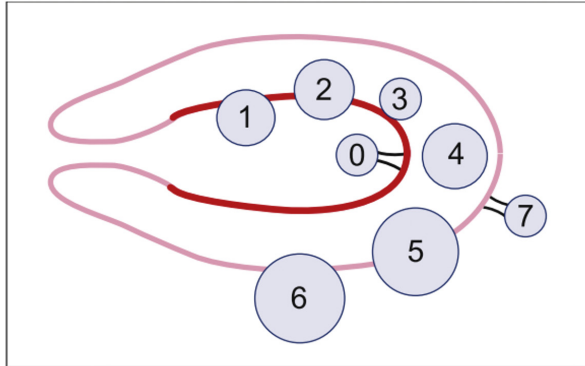


Figure 4. AUB due to myoma uteri (20)

The presence of myoma uteri detected by ultrasonography is used to determine the primary classification (45-50). Differentiation of myoma uteri (submucosal, SM), which is associated with the endometrial cavity, from other myoma uteri types is within the secondary classification (51,52).

Tertiary classification is based on the classification previously defined by Wamsteker and approved for use by the European Society for Human Reproduction and Embryology (ESHRE). This classification is summarized in Table 2 (42, 53-55).

Table 2. Classification of myoma uteri according to their localization (42, 53-55)	
Type 0	Intracavitary pedunculated lesions
Type 1	Submucous fibroids less than 50% intramural
Type 2	Submucous fibroids with more than 50% intramural localization
Type 3	100% intramural and in contact with the endometrium
Type 4	Intramural
Type 5	Subserous localized but more than 50% intramural
Type 6	Subserous localized but less than 50% intramural
Type 7	Pedunculated subserous
Type 8	Cervical, parasitic, and other fibroids not associated with the myometrium



***Malignancy and Premalignant Lesions (AUB-M)***

Although hyperplasia and malignancy are not very common in women in the reproductive period, attention should be paid to women with risk factors such as obesity and chronic anovulation (56,57).

The most common gynecological cancer is endometrial cancer. In addition, with the increase in obesity and metabolic syndrome, gynecological cancers have also increased. Cervical cancer can also cause bleeding, especially independent of menstrual cycles. One of the causes of AUB is uterine sarcomas. Sarcoma is detected in approximately 3 out of 1000 patients who are operated with a preliminary diagnosis of benign leiomyoma (58,59).

Studies in the literature suggest that age, ethnicity (higher in black race), previous history of pelvic radiation therapy, hereditary leiomyomatosis, and long-term use of tamoxifen may pose risks. (60,61,62).

Although there are no strong criteria to clearly distinguish leiomyoma from leiomyosarcoma radiologically, sarcoma should definitely be considered in a rapidly growing uterus. Endometrial biopsies performed during AUB etiology studies may provide little information about sarcomas. In addition, intra-abdominal morcellation of leiomyomas, especially laparoscopically removed, should not be performed if there are sarcomatous differences, as it will cause spread in the abdomen. For hyperplasia and cancer classifications, the World Health Organization (WHO) or FIGO should make further classification (63,64).

***Coagulopathy (AUB-C)***

Many systemic diseases can cause AUB by affecting hemostatic parameters. Coagulation disorders, such as von Willebrand disease, are diagnosed in approximately 13% of patients with AUB (65). The role of coagulopathies in the pathogenesis of AUB is unclear, and how often they are asymptomatic or minimally symptomatic remains to be determined (66).

The diagnosis can usually be made with a detailed anamnesis. Hemostatic disorders should be kept in mind in severe and persistent bleeding. The presence of heavy menstrual bleeding, unstoppable bleeding during surgery and tooth extraction or after trauma, spontaneous gingival bleeding and family history should suggest hemostatic disorders and should be screened accordingly. The group that is requested to be screened for bleeding disorders in women with heavy menstrual bleeding is shown in Table 3 (67).

**Table 3. Screening for bleeding disorders in women with heavy menstrual bleeding (67).**

<b>Heavy menstrual bleeding since menarche</b>
<b>Any of the following:</b>
• Postpartum hemorrhage
• Bleeding associated with surgery
• Bleeding after dental interventions
<b>Coexistence of two or more of the following symptoms:</b>
• Bruising once or twice a month
• History of nosebleeds once or twice a month
• Frequent bleeding gums
• Family history associated with bleeding symptoms

### ***Ovulatory Disorders (AUB-O)***

Periodic bleeding indicates ovulation, while bleeding of varying amounts and timing, usually after amenorrhea, indicates ovulatory dysfunction (AUB-O). Polycystic ovary syndrome (PCOS), hyperprolactinemia, many endocrine problems such as hypothyroidism, steroid use or iatrogenic causes (such as phenothiazine or tricyclic antidepressant use), systemic diseases such as chronic liver disease, chronic kidney disease, stress, eating disorders, strenuous physical activity. Causes of hypothalamic pituitary dysfunction are also included in this group (68,69).

### ***Endometrial Causes (AUB-E)***

Conditions that have regular bleeding and ovulation and no other cause is found are endometrial causes. The reason for this situation may be the deficiency of vasoconstrictors such as Endothelin-1 and PGF2 $\alpha$  or the excess of plasminogen activator. Only after excluding other causes can endometrial causes be diagnosed (70).

### ***Iatrogenic (AUB-I)***

Intrauterine systems with hormones that directly affect the endometrium and pharmacological agents that affect coagulation or ovulation indirectly by disrupting it, breakage bleedings as a result of external steroid administration, interim bleedings that occur during cyclic estrogen and progesterone use, and intermittent bleedings that occur after amenorrhea as a result of continuous use are evaluated in this group.

***Unclassifiable (AUB-N)***

Conditions such as arteriovenous malformation or myometrial hypertrophy that have not yet been fully elucidated or detected rarely are included in this group.

***1.1.6. Laboratory Tests***

A detailed anamnesis should be taken from women who apply to the clinic with the complaint of abnormal vaginal bleeding in reproductive age. Whether the bleeding complaint is acute or chronic in the past medical history, ovulatory disorder, systemic disease, medications used by the patient, previous surgery and family history, and socio-economic status should be questioned in detail.

After a detailed physical examination, the patient should be evaluated holistically with imaging methods such as abdominal and vaginal USG and laboratory tests. Physical examination consists of blood pressure, weight and height measurement, physical evaluation of thyroid, heart, lung and abdomen, pelvic examination with speculum and pap smear. In patients who apply to the clinic with the complaint of AUB, pregnancy should be ruled out by performing a beta-hCG test first. Thrombocytopenia and anemia should be excluded with a complete blood count (CBC). Serum thyroid stimulating hormone (TSH) levels should be checked in patients with ovulatory dysfunction and a history of oligomenorrhea and/or amenorrhea. Both hypothyroidism and hyperthyroidism can cause menstrual disorders ranging from amenorrhoea to menorrhagia (71). Cervical cytology should be obtained from all patients who applied to the clinic and biopsy should be performed in the presence of lesions. In addition, CBC (detection of anemia and thrombocytopenia), prothrombin time (PT) and activated partial thromboplastin time (aPTT) (exclusion of coagulopathy), factor 8 and von Willebrand factor (evaluation for von Willebrand disease), thyroid function tests (to exclude thyroid diseases), prolactin (PRL) in the presence of oligomenorrhea and galactorrhea, and other systemic diseases, disease-oriented tests should be requested. In patients with additional systemic diseases (liver, kidney, etc.), further examinations for known diseases should be performed (72). In patients younger than 25 years of age or those who have more than one sexual partner, adnexal tenderness, vaginal discharge, pelvic pain, cervical pain complaints should be evaluated for human papillomavirus together with Chlamydia trachomatis, Neisseria gonorrhoea and Trichomonas vaginalis (73).

To exclude cervix and vagina lesions, speculum examination should be performed, cytology should be taken from the cervix, and biopsy should be performed in suspicious cases. The endometrial cavity should be evaluated in

terms of endometrial hyperplasia and carcinoma, and if necessary, a sample should be taken from the endometrium by pipelle or probe curettage methods. The method of obtaining samples from the endometrium is the first procedure to be applied after excluding pregnancy in women aged 45 years and older with AUB complaint. Endometrial sampling is also recommended in women younger than 45 years of age with recurrent AUB, who do not respond to medical treatment, and who have a history of unopposed estrogen exposure as in PCOS and obesity. Histopathological evaluation and endometrial sampling in women with AUB is the gold standard method in the differentiation of endometrial pathologies (74).

### **1.1.7. Display Methods**

Recently, methods such as transvaginal USG, computed tomography (CT), MRI, saline infusion sonography (SIS), 3D USG and hysteroscopy have been used in the evaluation of the uterine cavity.

#### ***Transvaginal Ultrasonography (TVUSG)***

Ultrasonography is a very useful method because it is not an invasive procedure, provides high resolution images, distinguishes the soft tissue structures and fluids in the pelvis in different imaging planes, and evaluates the size, location, contours, vascularization and physiology of the pelvic organs (75).

The presence of only endometrial thickness in women with regular menstrual cycles is not an indicator of hyperplasia or malignancy. Endometrial thickness decreases further as patients age (76). In 10-15% of patients with postmenopausal bleeding, the cause is endometrial cancer. Other causes may be endometrial atrophy, endometrial hyperplasia, endometrial polyp or myoma uteri (77).

The primary role of ultrasonography is to decide which patients will undergo endometrial biopsy and which patients will receive medical treatment or follow-up. Irregularities in the endometrium, heterogeneity, or increased abnormal blood supply should be considered when deciding on endometrial sampling in patients with postmenopausal bleeding without endometrial thickening (78).

When hysteroscopy and TVUSG are compared, TVUSG has better patient comfort and is more effective in detecting endometrial hyperplasia and cancer (79-81). The advantage of TVUSG is that the myometrium and endometrium can be evaluated simultaneously (82).

Although sonography is considered the first step in the evaluation of patients with AUB, biopsy, SIS, or hysteroscopy can be performed if the endometrium is not visible, if the endometrial thickness is increased, or if there is an inhomogeneous

appearance (83). In cases where the endometrium cannot be evaluated clearly, SIS or hysteroscopy may be more diagnostic to detect focal intrauterine pathology.

### ***Magnetic Resonance Imaging (MRI)***

This method is a reliable method for determining the uterine anatomy, distinguishing between adenomyosis and leiomyoma, and determining the proximity of fibroids to the uterine cavity (84).

Although sonography is the first imaging modality in women with suspected leiomyoma, MRI is the most sensitive imaging tool. It is used for masses in which an adequate image cannot be obtained with ultrasound, when TVUSG is not accepted by patients, for patients where optimal evaluation cannot be performed in obese patients and for patients who are scheduled for surgery (85).

### ***Saline Infusion Sonography (SIS)***

It is a method developed for monitoring the cavity in the endometrium under the guidance of USG by distension of the cavity in the endometrium with volume-enhancing solutions such as sterile saline, lactated Ringer's, and 1.5% glycine (7,74).

Using SIS, it is possible to visualize not only the part of the lesion extending into the endometrial cavity, but also the part in the myometrium, and even information about its relationship with the serosa can be obtained (86).

It is very important in terms of surgical planning for treatment. It is contraindicated in cases of pregnancy or suspected pregnancy, pelvic infection, unexplained pelvic tenderness, hematoma, atrophic or stenotic cervix. Compared with TVUSG, SIS generally provides an advantage in detecting masses within the cavity and distinguishing between endometrial, submucosal, and intramural lesions (87,88).

### ***Hysteroscopy***

Hysteroscopy is an imaging method that allows direct visualization of the cervical canal, endometrial cavity and tubal ostia, and providing diagnosis and treatment. The hysteroscopy method is considered the gold standard for the evaluation of uterine lesions and the ability to obtain a direct and magnified view of the endometrium (89).

Allowing sampling is one of the advantages of hysteroscopy, but the need for anesthesia or analgesia is a disadvantage in terms of patient comfort (90). Hysteroscopy is an invasive and expensive method and may cause complications such as uterine perforation and genitourinary infection (91).

Sonography is preferred in primary care in cases of abnormal bleeding. However, sometimes USG may not be sufficient to evaluate focal lesions such as adenomyosis, endometrial polyp or myoma uteri. In this case, advanced imaging methods such as SIS, MRI or hysteroscopy are used.

### 1.1.8. Treatment

Before treatment, the first goal is always to make a correct diagnosis and plan the treatment accordingly. Therefore, pregnancy and malignancy should be excluded first. The primary goal in the treatment of patients with abnormal uterine bleeding is to regulate the menstrual cycle, minimize blood loss, and improve quality of life. Treatment should be planned according to the patient's age, contraceptive requirements, bleeding severity and duration. Hematology consultation may be requested for coagulation problems in adolescence. It should not be forgotten that obesity can cause anovulation due to chronic estrogen exposure and the importance of lifestyle changes (diet, exercise) should be explained to the patient. Treatment modalities in abnormal uterine bleeding are summarized in Figure 5 (92).

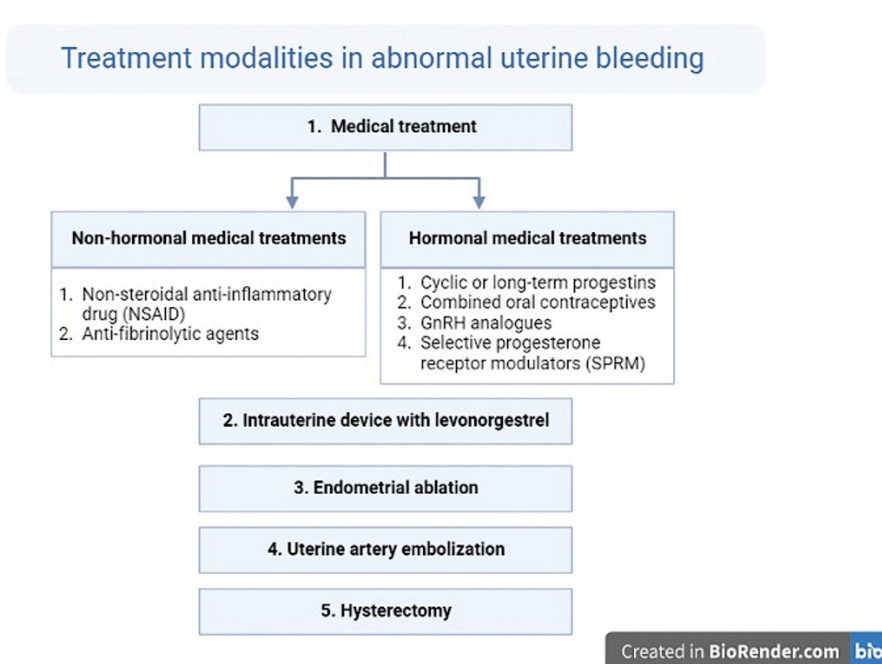


Figure 5. Treatment methods for abnormal uterine bleeding (92)

### ***Medical Treatment***

Medical treatment for abnormal uterine bleeding can be divided into hormonal and non-hormonal treatments. Among non-hormonal methods, anti-fibrinolytics and non-steroidal anti-inflammatory drugs can reduce menstrual bleeding by up to 50% (18,19). Among other medical treatments, Danazol is a synthetic androgen (17- $\alpha$ -ethinyl testosterone) with anti-estrogenic and anti-progestogen activities that reduces blood loss with endometrial atrophy. GnRH agonists provide short-term relief from bleeding problems. Analogs control bleeding through down-regulation of the pituitary and inhibition of cyclic ovarian activity. Desmopressin, a synthetic analogue, is used to treat AUB in women with coagulation disorders. Other treatment options are hemostatic agents, selective estrogen receptor modulations, Epsilon aminocaproic acid, Gestrinon (19-Norsteroid derivative), and interleukin II (73).

***Management in acute bleeding:*** Anovulatory hemorrhages may be active enough to require immediate intervention. Combined oral contraceptives, medroxyprogesterone acetate (MPA) and tranexamic acid (TXA) are drugs used in acute bleeding. Alternatives to high-dose estrogen are MPA (10 mg) or norethindrone acetate (NETA, 5-10 mg). Another treatment option is TXA (93-97).

***Management in chronic bleeding:*** The most common cause of chronic bleeding is ovulation disorders. The aim of treatment is to treat anovulation. If anovulation cannot be treated, progesterone therapy can be given to mimic the physiological cycle. For those who want contraception, combined OCS, depot medroxyprogesterone acetate (DMPA), intrauterine device with levonorgestrel or subcutaneous implant with levonorgestrel can be recommended (98,99).

### ***Surgical Treatment***

Surgical treatment can always be considered in cases of abnormal uterine bleeding that does not respond to medical treatment. In conservative surgery, full curettage, dilatation and curettage, loop, endometrial ablation and uterine artery embolization methods can be used (74). If there is no underlying pathology, surgical methods such as endometrial destruction or hysterectomy can be applied. In uterine artery embolization, it is the process of blocking both uterine arteries with particles injected through a catheter inserted through the femoral artery. This process allows the fibroids to shrink, performed by interventional radiology.

Endometrial ablation is performed by surgical removal of the endometrium (first generation hysteroscopic techniques) or by inducing full-thickness necrosis with controlled energy application (second generation techniques) (93). Myomectomy is a fertility-sparing surgical procedure performed by removing fibroids and reconstructing the uterus. However, myomectomy surgery also has risks such as major bleeding, hysterectomy risk, prolonged hospital stays in the postoperative period, formation of postoperative adhesions and fibroids consisting of seven. Hysterectomy is the appropriate surgical method for patients who have completed their fertility (73). Although hysterectomy is the surgical method of choice for patients with major fibroids, it has also been successfully performed for patients with treatment-resistant AUB (100,101).

## **CONCLUSION**

Abnormal uterine bleeding is among the most common causes of admission to gynecology outpatient clinics and its prevalence is increasing day by day. It is an important complication that reduces women's quality of life and productivity and increases the cost of health care. It also accounts for 30% of gynecological surgeries. Considering all this information, abnormal uterine bleeding can be considered as an important health problem and more studies are needed on this disease.

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