

Management Strategies for Heavy Menstrual Bleeding

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Abstract

- **Objective:** To provide a review of the causes, impact, and treatment options for heavy menstrual bleeding.
- **Methods:** Case presentation and review of the literature.
- **Results:** Heavy menstrual bleeding is common in reproductive-aged women. It can occur from the time of menarche until menopause. In the United States, heavy menstrual bleeding is often defined in a research setting as bleeding more than 80 mL during 1 period. Actual measurement of bleeding is impractical and unnecessary, as some women will have symptoms of heavy bleeding at lesser amounts. Functionally, heavy bleeding warranting investigation is determined by the woman's symptoms and concerns. Interference with work or social situations and associated symptoms such as pain and fatigue are important. The woman's assessment of her bleeding should guide her care. The most common causes of heavy menstrual bleeding are idiopathic bleeding, with an ovulatory pattern and an apparently normal uterus, anovulatory bleeding, disorders of hemostasis, and local lesions of the uterus such as polyps and fibroids. Diagnostic tests included hematology and coagulation tests, tests for underlying medical illnesses where appropriate, endometrial sampling, pelvic ultrasound, sonohysterogram, and hysteroscopy. Treatments for heavy menstrual bleeding include hormonal regulation or suppression of menses, nonsteroidal anti-inflammatory drugs, antifibrinolytic drugs, levonorgestrel-containing intrauterine devices, and endometrial destruction. If a local anatomic lesion exists, resection of the lesion, usually via hysteroscopy, can correct the situation. However, some treatments may have side effects of irregular bleeding or amenorrhea, which may not be acceptable to some women.
- **Conclusion:** Heavy menstrual bleeding is a common condition. The severity of symptoms is frequently best assessed by the woman. A variety of medical and surgical approaches are available.

CASE STUDY

Initial Presentation



A 38-year-old woman presents with the complaint of heavy menstrual periods for the past 2 years.

History

Up until 2 years ago, her periods lasted 4 to 5 days and seemed of normal amount. Currently, her periods are regular, every 26 to 28 days, and last 7 to 8 days. Three days of her period are "very heavy" with passage of clots. She uses a super tampon together with pads and has to change her tampon every hour or two, sometimes bleeding through her tampon and pads. She has "period clothes" that are less likely to show blood and wears these during her period so that other clothing is not stained. She says she has moderately severe cramps with her period.

She is in good health generally and works as a medical technician. She runs 2 to 3 miles several times a week but cannot run during her period or for several days afterwards. She does not have any history of excessive bleeding or bruising.

She has had 2 normal vaginal deliveries and 1 first trimester abortion. She has infrequent intercourse and uses condoms for contraception. She has not had any previous surgery.

She does not take any prescription medications. She takes iron and vitamins daily.

- What is the definition of heavy menstrual bleeding?
- How common is it?

Heavy menstrual bleeding refers to excessive bleeding that occurs during regular, or fairly regular, menstrual cycles. There is a lack of consensus on the correct terminology to use for the patient with heavy menstrual bleeding. The term

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heavy menstrual bleeding is often used interchangeably with menorrhagia, dysfunctional bleeding, abnormal uterine bleeding and a variety of other names [1]. Some experts argue that the terms abnormal and dysfunctional uterine bleeding, include medical conditions as well as structural or biochemical abnormalities, while the terms menorrhagia and heavy menstrual bleeding refer to idiopathic bleeding. This review will use the terms heavy menstrual bleeding and menorrhagia as a way to describe a woman's perception and experience of her bleeding being greater than expected or desired. The etiology of this bleeding may include underlying structural or endocrine pathology as well as idiopathic causes.

Menstrual disorders carry the highest annual prevalence rate of all gynecologic conditions [2]. Menorrhagia has a reported prevalence worldwide of 19% among women of reproductive age [3]. Menstrual problems account for 21% of all gynecology referrals [4]. In one large study, women reporting heavy menses had an odds ratio of 1.45 for use of health care compared with those who did not [5]. One survey of college students found that one third of students had used treatment for heavy or painful periods and that those with heavy or painful periods were more likely than other women to feel an impact on their social or academic life [6].

The definition of a normal menstrual cycle is an interval of 28 days (± 7 days) and a duration of menses of 4 days (± 2 to 3 days). The average blood loss per cycle is 30 mL. Blood loss above 80 mL is considered heavy menstrual bleeding or menorrhagia [7,8]. Direct measurement of blood loss is impractical. A visual assessment technique, which uses a pictorial chart of blood loss and menstrual products, has high positive and negative predictive values when compared to direct measures of menstrual blood loss [9].

• How do women with heavy menstrual bleeding present?

Some women with blood loss over 80 mL do not identify themselves as having menorrhagia, and some women with blood loss under 80 mL consider the amount of bleeding to be undesirable [10,11]. Women may consider the amount of bleeding unacceptable if it represents an increase from their customary amount, even if the total amount did not seem excessive to others. [10]. Clots are worrisome to some women [10]. In one study, women reported that pain was the most bothersome symptom associated with heavy bleeding, followed by mood changes and fatigue [12].

Given the impracticality of quantifying blood loss in an individual woman, the woman's symptoms and social, sexual, and personal reactions to the bleeding are the most important factors in diagnosing heavy bleeding. One study

of American women found that the majority of women with a complaint of abnormal uterine bleeding had episodes of flooding or gushing of blood or passing blood clots, and a majority found it necessary to carry extra clothing [13]. One third of women said that the bleeding limited their daily and social activities, and half reported sexual limitations. Women reported scheduling work around menstrual periods, as well as missing work because of bleeding [14]. Concealment of menstruation is important for many women; some women used other complaints, such as abdominal pain, to explain absences [15]. "Menstrual etiquette" dictates concealment, and some women limit activities such as going out of the house for fear of bleeding through clothing [15].

• How does heavy menstrual bleeding influence medical care?

In addition to concealing menstruation in public, many women are uncomfortable discussing menstrual bleeding in private. In an interview study of British women, many women reported not discussing their periods with family or friends [10]. Some women expressed ambivalence about seeking medical care because periods were regarded as normal [10] or because menstrual blood was considered different from other blood [14]. Some women questioned their assessment of their own experience and thought that others might belittle their complaints [14]. Women also had mixed responses to medical care, with some women feeling that their concerns were not addressed, while others had a more positive interaction [10].

Practitioners themselves had conflicts about care associated with heavy menstrual bleeding. Some primary care providers found that the definitions of normal and abnormal periods were not helpful, and noted difficulty in deciding what was normal and what was not. [16]. Some practitioners relied more on their own experience than medical models. Patients, in turn, have expressed dissatisfaction, stating that questions failed to adequately characterize their experiences [17]. In some studies women expressed desire to have the practitioner focus on symptoms and experiences rather than blood loss [10,17]. Treatment was considered valuable when the amount of bleeding was decreased, but cycle control was also important, so that bleeding was predictable [15].

• What are the causes of heavy menstrual bleeding?

Determining the etiology of heavy menstrual bleeding allows the woman to have information about the likely course

of bleeding and whether it is likely to ameliorate by itself. It also allows for consideration of the appropriate options for treatment.

Idiopathic Bleeding

Heavy menstrual bleeding in ovulatory women who have an apparently normal uterus is termed idiopathic bleeding. It is a diagnosis of exclusion once anovulation and anatomic lesions have been deemed unlikely. Idiopathic bleeding, or idiopathic menorrhagia, may be recurrent and profuse. Idiopathic bleeding may occur because of, or be exacerbated by, a coexisting medical problem, particularly coagulopathies. Some other causes are discussed below.

Anovulation

Although most women with regular menstrual cycles are ovulatory, some cycles are not ovulatory. Anovulatory cycles result in continuous estrogen exposure without the periodic modulating effect of progesterone, because progesterone is produced only with ovulation. This exposure to unopposed estrogen results in endometrial proliferation. The proliferation continues, outgrowing its blood supply, and the endometrium randomly breaks off, resulting in abnormal uterine bleeding [18]. Anovulation may be sporadic or continuous.

As women reach menopause, ovulatory cycles become less frequent, although a pattern of regular menses may persist. Anovulatory bleeding is seen in many perimenopausal women 3 to 5 years before complete ovarian failure and is also common in the first years after menarche [19]. This type of bleeding is also common in patients with obesity.

Coexisting Medical Disorders and Chronic Disease

Secondary disruption of ovarian function, resulting in anovulation, may also be seen with states leading to abnormal endocrine influence on the hypothalamic-pituitary axis. These situations may include polycystic ovaries, hypothyroidism and hyperthyroidism, hyperprolactinemia, congenital and acquired adrenal hyperplasia, Cushing's syndrome, adrenal insufficiency, strenuous physical exercise, and medications [20]. In many of these situations, the presenting symptom is likely to be amenorrhea; however, breakthrough bleeding from endometrial atrophy or from unopposed estrogen may result in irregular bleeding.

Blood Dyscrasias

Defects in hemostasis may result in menorrhagia either with ovulatory or anovulatory cycles and should be considered when the woman gives a history of heavy menstrual bleeding since menarche. Defects in hemostasis may be primary (platelet defects) or secondary (plasma protein defects)

[21,22]. Von Willebrand factor is vital to platelet adherence. Secondary hemostasis is the fibrin deposition that occurs as a result of the coagulation system, which requires multiple coagulation proteins; increased menstrual blood loss may be seen if the coagulation system is deficient in platelets or fibrin. Some of the more common coagulation disorders include Von Willebrand's disease and thrombocytopenia. Acquired coagulation defects can result from liver or renal disease.

Anatomic Causes

Pathology of the cervix, uterus, and ovary may present as abnormal uterine bleeding. Leiomyomas and endometrial polyps are possibilities. Endometrial hyperplasia and malignancies of the uterus and cervix usually cause irregular bleeding; these etiologies would be unlikely when heavy menstrual bleeding without intermenstrual bleeding is the complaint.

Bleeding from leiomyomas depends on the location of the leiomyoma in relation to the uterine cavity, and to a lesser extent, size and multiplicity. In a cross-sectional study, 67% of women with submucosal fibroids had heavy bleeding, compared to 30% to 50% of women with fibroids in other locations, and 28% of women without fibroids. [23]. Fibroids may be present in 20% to 50% of women, and may be asymptomatic even when quite large [24].

Endometrial polyps are generally benign and may be completely asymptomatic. They seldom cause extensive bleeding, although on occasion they may become as large as several centimeters.

There are several types of endometrial hyperplasia. Simple hyperplasia is the overgrowth of histologically benign cells. It has a benign outcome, with less than 1% of women with simple hyperplasia progressing to carcinoma [25]. Simple hyperplasia and complex hyperplasia without atypia may be treated hormonally. Atypical hyperplasia or adenomatous hyperplasia may be precursors to endometrial cancer and require consultation; these types of hyperplasia may warrant aggressive treatment such as hysterectomy [26,27].

• What are the steps in making the diagnosis?

The first step in making the diagnosis of abnormal uterine bleeding is to take a history, with a description of the timing, amount, and character of bleeding.

All patients should also have a physical examination and laboratory testing including a pregnancy test, hemoglobin or hematocrit level, and a coagulation panel if indicated by history. A distinction between ovulatory and anovulatory cycles is helpful to direct further evaluation and treatment.

Ovulatory cycles are predictable and regular, with a mean interval of 28 days (± 7 days), and are often associated with symptoms such as lower abdominal cramping, midcycle pain, breast tenderness, and bloating [28]. Anovulatory cycles are more unpredictable and irregular, with variations in quantity of blood loss and length of bleeding period. The distinction between ovulatory and anovulatory bleeding may not be important if initial treatment is helpful. However, anovulatory bleeding is likely to respond to hormonal treatment, and may not respond to other treatments such as nonsteroidal anti-inflammatory drugs. If history alone does not clarify ovulatory versus anovulatory bleeding, there are several laboratory methods to assist in determination. Serum progesterone levels begin to rise after ovulation; elevated levels in the second half of the menstrual cycle (3.55 ng/mL) are consistent with ovulation [28,29]. An endometrial sampling result of secretory endometrium can also confirm that ovulation has taken place.

If an anovulatory pattern has persisted, the cause of anovulation should be sought. The first tests to consider are thyroid-stimulating hormone and prolactin. Other tests include glucose screening, free testosterone, dehydroepiandrosterone sulfate (DHEAS), follicle-stimulating hormone (FSH), and ovarian imaging. If a coagulation defect is suspected, then platelet count, INR and partial thromboplastin time (PTT) are indicated. Von Willebrand factor or specific members of the clotting cascade can also be obtained [30].

Examination and Workup of Patient

 The patient's pelvic examination is normal. Her bloodwork shows that she is mildly anemic. Her pregnancy test is negative. Her thyroid-stimulating hormone level and platelet count are normal. Based on her history, it is likely that she is ovulatory. Also, since the bleeding is of recent onset, a congenital clotting defect is unlikely. Her bleeding is most likely idiopathic or due to a local lesion of the uterus.

• What are the patient's options for treatment?

In treating women with heavy menstrual bleeding, the severity of the bleeding and the patient's underlying health status and her preferences should all be considered. Pharmacologic treatment is the typical first-line treatment for heavy menstrual bleeding (Table). Both hormonal and nonhormonal treatments may be effective for women with idiopathic bleeding and may be effective even when a local lesion is present. Hormonal manipulation is the typical treatment for heavy uterine bleeding caused by anovulation. Treatment of anovulatory bleeding is impor-

tant not only for symptomatic relief, but also because over time chronic exposure to estrogen can lead to endometrial hyperplasia and even uterine cancer. Typically, heavy bleeding associated with blood dyscrasias or hormonal abnormalities improves once the underlying medical condition is corrected.

Combination Hormonal Contraception

Low-dose oral contraceptive pills (OCPs) are the most frequently used regimen for the treatment of heavy menstrual bleeding caused by anovulation or for idiopathic bleeding. Combined estrogen and progestin formulations inhibit pituitary production of gonadotropins, which in turn halts the production of estrogen. OCPs should only be used in women without a contraindication to estrogen (eg, smoking over age 35, history of thromboembolic disease, history of an estrogen-dependent neoplasm, classic migraine with aura, severe hypertension, liver dysfunction).

Monophasic or triphasic OCPs are both effective treatments in decreasing menstrual blood loss [31]. Although products containing 30 to 35 mcg of estrogen are most frequently used, 20 to 25 mcg may also be used. While there is not specific data to support the use of other combined hormonal contraceptives such as the transdermal patch or the vaginal ring in the treatment of heavy bleeding, these methods provide similar serum hormonal levels and may be a reasonable substitute for OCPs. Overall, the transdermal patch has slightly higher serum estradiol levels and the ring slightly lower levels as compared to OCPs [32]. Other formulations may also be beneficial. Continuous OCPs may be associated with fewer bleeding days as compared to 28-day cycles [33]. Likewise, continuous use of the transvaginal contraceptive ring is associated with less bleeding than typical use [34]. One small study found no significant difference in the amount of bleeding between women on OCPs, mefenamic acid, low-dose danazol, or naproxen [35]. Alternatively, for these women, OCPs can be given 2 to 3 times daily with a gradual taper to daily use over a one to two week period. One small trial randomized hemodynamically stable women with acute bleeding to an OCP taper or to medroxyprogesterone acetate. Cessation of bleeding occurred in 88% of the OCP group and 76% of the progesterone group. Median time to bleeding cessation was 3 days in each group [36].

Progestins

Women with an unstable, thickened endometrium from chronic anovulation may respond well to progestin therapy. This may also be an effective treatment for women for whom estrogen is contraindicated. There are no randomized controlled trials comparing progestin therapy to combined estrogen and progestin treatment [37]. Progesterone can

Table. Treatments for Heavy Menstrual Bleeding

Treatment	Advantages	Disadvantages	Comments
Oral contraceptives (combined)	Inexpensive Established safety for long-term use May decrease cramping*	May not be effective Contraindicated in some women	Diminution in bleeding up to 50% Contraceptive patch and ring should have similar effects Continuous use may have additional benefit
Depot medroxyprogesterone acetate (DMPA, Depo-Provera)	Inexpensive, 3-month injections Excellent contraceptive	May have irregular bleeding Cannot be reversed quickly	
GnRH agonists (Lupron)	Monthly or 3-month injections	Menopausal symptoms Expensive	Not for long-term use, often used to correct anemia prior to operative treatment
Levonorgestrel IUD (Mirena)	5-year use Excellent contraceptive	Spotting or irregular bleeding Initial cost	90% diminution in bleeding, amenorrhea not uncommon
Prostaglandin synthetase inhibitors	Nonhormonal treatment	Taken several times a day May have gastrointestinal symptoms	Modest reduction in blood loss
Plasminogen activator inhibitors	Nonhormonal treatment	Not widely used in U.S.	
Hysteroscopic resection (includes hysteroscopic myomectomy)	Treats local lesions specifically Preserves fertility	Operative procedure, requires expertise Removal of fibroid may require more than 1 procedure	Only appropriate when a distinct lesion such as a polyp or fibroid is present
Endometrial ablation	Widely available, sometimes done in outpatient setting	Expense varies depending on setting	Multiple technologies exist; optimal method has not been demonstrated
Uterine artery embolization	Immediate response (can be used for hemorrhage) May be appropriate if surgery is risky	Hospital procedure, requires expertise May cause necrosis of pedunculated fibroid	
Myomectomy	Removes only fibroids May preserve fertility	Operative procedure is major surgery	Uncertain response of bleeding to removing fibroids as other smaller fibroids may exist; ultrasound/MRI treatment is a nonsurgical approach to destroying fibroids, but is relatively new and not widely available
Hysterectomy	Definite stop of bleeding Irreversible	Operative procedure is major surgery	Multiple techniques: laparoscopic, vaginal, and abdominal, depending on situation

*Any hormonal method may decrease cramping, parallel with decreased bleeding.

either be used as an initial treatment to induce a withdrawal bleed or as the primary therapy. After the withdrawal bleed, OCPs can then be started. Alternatively, cyclic progestins can be used.

Progestins can be administered intramuscularly, orally, or intrauterine. Medroxyprogesterone acetate 10 mg or norethisterone 2.5 to 5 mg daily may be used for a minimum of 12 days a month for 3 to 6 months to induce endometrial atrophy. However, oral progestins may be most effective in reducing blood loss when used for 21 days compared with a shorter course [38]. They can also be used to induce a progesterone withdrawal bleed, followed by the initiation of an OCP. Alternatively, intramuscular depot medroxyprogesterone acetate 150 mg can be given every 12 weeks. Initially, the depot preparation may lead to an increase in unscheduled

bleeding; however, over time a significant proportion of users will obtain amenorrhea [39].

Levonorgestrel-Releasing Intrauterine Device

Levonorgestrel intrauterine devices (IUDs) are alternative medical options for heavy menstrual bleeding. Blood progestin levels are lower than that seen with oral or intramuscular preparations, so related side effects are lower. In addition, the device offers effective contraception and has been shown to lead to significantly decreased bleeding as compared to other medical treatments including nonsteroidal anti-inflammatory medications and antifibrinolytics [40]. Compared with oral progestins, patient satisfaction is higher with levonorgestrel IUDs [41]. In a randomized trial, intrauterine progesterone was also superior to depot

medroxyprogesterone and oral medroxyprogesterone acetate 5 mg daily. Hemoglobin was significantly higher in the intrauterine system compared to the oral and depot groups, which had similar results [42]. Spotting after insertion of a levonorgestrel IUD is common in the first weeks or months. At 12 months after insertion, amenorrhea in users has been reported between 20% and 80% [39].

Gonadotropin-Releasing Hormone Agonist Therapy

GnRH agonists may be effective treatment in patients with heavy menstrual bleeding who fail to respond to other hormonal treatments, who have blood disorders, or who require short-term menstrual suppression. They are effective in inducing amenorrhea and preventing acute bleeding episodes. However, because of an initial upregulation in hormone production, ovarian suppression may take up to 3 weeks. These medications are therefore not suitable to end an acute episode of bleeding. In addition, GnRH agonists are associated with significant side effects, including hot flashes, vaginal dryness, and decreases in bone mineral density, which limit their duration of use. Add-back therapy with norethindrone acetate 5 mg daily or norethindrone acetate plus daily conjugated equine estrogens 0.625 mg provides effective protection against bone loss and can be used with GnRH agonists if treatment over 6 months is necessary [43].

Prostaglandin Synthetase Inhibitors

Because of data suggesting a role for prostaglandins in the development of heavy menstrual bleeding, prostaglandin synthetase inhibitors have been studied as an alternative therapy [44]. Average blood loss has been shown to be reduced by 20% to 50% when these medications are used [45]. As such, patients who are unable to tolerate hormonal treatment or for those patients requiring adjunct therapy, these medications may be an acceptable option. In addition, for women who also suffer from dysmenorrhea, these medications may provide additional benefit. Mefenamic acid (500 mg taken 3 times daily) is the most often studied; however, meclofenamic acid (50 mg taken 3 or 4 times daily) and naproxen (250–500 mg taken twice daily) have also been shown to be effective. Mefenamic acid may be associated with fewer gastrointestinal side effects [46].

Plasminogen Activator Inhibitors

Other nonhormonal therapies for heavy bleeding include plasminogen activator inhibitors, mostly commonly tranexamic acid (3–4 g daily) [45]. A randomized controlled trial of tranexamic acid, mefenamic acid, or ethamsylate showed a 54% reduction in blood loss with tranexamic acid while this reduction was only 20% with mefenamic acid.

Ethamsylate did not reduce blood loss [47]. Tranexamic acid has not been widely adopted in the United States because of a possible increased risk of thrombosis; however, a long-term study of women on tranexamic acid showed no difference in the rate of thrombosis [48].

• What if our patient wishes to become pregnant?

Hormonal contraceptives and the IUD are obviously contraceptive, and endometrial ablation often but not always results in infertility. Women who have heavy menstrual bleeding and wish to become pregnant have limited choices for treatment. If they have a focal lesion such as a polyp or small fibroid, resection of the lesion will not impair fertility; nonhormonal medication is also a possibility.

Treatment

 The patient is prescribed oral contraceptives. Over the next 3 months, the bleeding decreases somewhat and the cramps improve. However, the patient has breakthrough bleeding for several days each month. This result is not satisfactory to the patient, and she undergoes additional testing before trying another therapy.

• What diagnostic tests can help in identifying an underlying cause of heavy menstrual bleeding?

The purpose of further diagnostic testing is to identify anatomic lesions, hyperplasia, and malignancy. The primary methods used include endometrial biopsy or aspiration, ultrasonography, saline sonohysterography (SHG), and hysteroscopy. The point at which additional testing is undertaken is variable and may depend on the severity of symptoms, difficulty in finding an effective pharmacologic treatment, and the availability, financial or otherwise, of the testing.

Endometrial Sampling

The adequacy of endometrial biopsy or aspiration has been evaluated and found to be consistently above 87% in premenopausal patients [49–52]. The role of endometrial aspiration is chiefly to determine the presence of hyperplasia or carcinoma, which are uncommon in women under 45 [53]. Sampling should also be considered in women under 45 with risk factors for hyperplasia or cancer such as obesity, diabetes, unopposed estrogen therapy, tamoxifen use, or a history of chronic anovulation. Because of its safety, accuracy, adequacy, and ability to be performed in an outpatient setting,

endometrial biopsy has in most cases replaced the more invasive and expensive dilation and curettage procedure [54].

Transvaginal Ultrasonography

Transvaginal ultrasonography (TVU) is a noninvasive method of evaluating abnormal bleeding. While TVU can screen for ovarian masses, uterine fibroids, and other abnormalities, the measurement of endometrial thickness has become an integral part of the evaluation of women with abnormal bleeding. A thickened endometrium may indicate hyperplasia or neoplasia, or anatomic lesions such as polyps. The range of normal is wide in premenopausal women; normal women at ovulation may have an endometrial "stripe" of 10 to 16 mm [55], and the stripe may be thicker during the secretory phase. For this reason, an endometrial stripe measurement is not useful in premenopausal women to identify risk for hyperplasia or neoplasia. It may, however, provide information about other uterine pathology. Dueholm [56] found that when the endometrium was less than 6 mm, the probability of polyps or hyperplasia was 7.6%. At a thickness of 10 mm, the probability of polyps or hyperplasia was 13%, and with a thickness of 20 mm, 20%. TVU has better sensitivity and specificity for anatomic lesions than it does for hyperplasia [56,57].

Sonohysterography

Sonohysterography (SHG) is especially useful in evaluating the intrauterine cavity when baseline ultrasonography suggests an abnormality. The procedure is performed by instilling 10 to 40 mL of sterile saline into the uterine cavity through a 5F catheter, while imaging the uterus with either abdominal or vaginal ultrasound [58].

With SHG, the ultrasonographic appearances of submucosal fibroids and endometrial polyps are distinctive and provide a high degree of accuracy. Intramural myomas do not distort the cavity, whereas submucosal myomas result in a cavity with an irregular contour and a sessile attachment to the myometrium [59–61]. Polyps are usually hyperechoic and attached to the intrauterine wall by a stalk [62]. It is clinically important to make this distinction because the surgical approach may differ as a result. One study found submucosal fibroids in 5% and 9% of women undergoing SHG for abnormal bleeding, while polyps were about 3 times as common [57,61].

The sensitivity of SHG for detecting uterine abnormalities is over 90% in multiple studies [62,63]. The specificity of SHG in detecting hypertrophy, polyps, and submucosal myomas is also over 90% [62,63].

Diagnostic Hysteroscopy

Diagnostic hysteroscopy allows visualization of the endocervical canal and endometrial cavity and direct visualiza-

tion of myomas, polyps, and focal areas of proliferation (hyperplasia and carcinoma). In many cases, biopsy or surgical treatment can be performed during the same procedure. It is often performed in the operating room but may be performed in an outpatient office setting [64,65]. Hysteroscopes in use currently include a 3 mm (outside diameter) flexible scope and rigid hysteroscopes with an outside diameter of 3 to 5 mm. They may be used with minimal or no cervical dilatation; analgesia may not be necessary, or oral or intravenous analgesia may be used. Directed endometrial biopsy can be done. Operative hysteroscopes have a diameter of 8 to 10 mm and are usually used in an operating room.

Hysteroscopy has been shown to be equal to or more informative than other methods of diagnosing endometrial pathology. Multiple studies showed sensitivity and specificity of over 90% for endometrial polyps [66–68]; sensitivity is also high for the diagnosis of hyperplasia, although specificity is not as high.

TVU is highly sensitive at determining the occurrence of an anatomic lesion, while SHG and hysteroscopy are not only highly sensitive but highly specific [69,70]. The choice between SHG and hysteroscopy may be determined by relative availability.

Case Continued

 The patient undergoes a transvaginal pelvic ultrasound, which shows a possible polyp or blood clot within the uterus. A sonohysterogram is then done, which is completely normal.

The patient's testing establishes the cause of her heavy menstrual bleeding as idiopathic bleeding. If she had had an anatomic lesion such as a polyp or a fibroid, local resection would have been discussed. She did not want to continue OCPs as they did not control her bleeding to the degree that she desired, and they had the side effect of irregular bleeding. She decided to try a levonorgestrel IUD. After insertion, her periods became lighter but she had several months of spotting. After 3 months, the spotting stopped completely and she had very light regular periods lasting 1 to 2 days.

- What are other treatments for heavy menstrual bleeding?

Acute and Severe Bleeding

For women who have acute heavy bleeding or hemorrhage, immediate initiation of hormonal treatment is warranted. Medical therapy is effective in slowing down bleeding in over 90% of cases [71]. An estrogen preparation is most frequently used in women without a contraindication. Conjugated equine estrogen (Premarin) 25 mg IV every

4 hours for 24 hours was proven in a randomized controlled trial to be more effective than placebo [72]. OCPs have been shown to reduce the number of bleeding days and overall menstrual blood loss in mild to moderate bleeding, and therefore are likely to have an impact on heavy menstrual bleeding as well. There is, however, a lack of well-designed randomized trials evaluating use of OCPs for this purpose [73]. In heavy menstrual bleeding, a taper in a dosage equivalent to 10 to 20 mg per day of estrogen in 4 divided doses is recommended [74].

In women with severe refractory bleeding who do not respond to medical therapy or who are hemodynamically unstable, a dilation and curettage is indicated. This should not be considered long-term therapy as the effects disappear by the second month [75].

After an acute episode of bleeding, women should be maintained on hormonal treatment to induce amenorrhea for several weeks and allow any resulting anemia to resolve.

Surgical Therapies

In women who have persistent heavy bleeding which is refractory to medical treatment, surgery should be considered. Among these options are endometrial ablation, uterine artery embolization, and hysterectomy. Additional surgical treatments such as abdominal myomectomy and magnetic resonance-guided focused ultrasonographic myolysis can be considered for women with bleeding from uterine fibroids. For patients for whom an ultrasound, hysteroscopy, or sonohysterogram suggest an endometrial polyp or submucosal fibroid, hysteroscopic resection of the lesion may resolve the abnormal uterine bleeding while preserving fertility.

In patients without an obvious uterine lesion and that have persistent bleeding despite medical treatment or in patients who do not tolerate hormonal therapy, endometrial ablation can be considered. Destruction of the endometrium should only be attempted in women not desiring future fertility and after a biopsy excludes malignancy or hyperplasia. Global endometrial ablation can be done hysteroscopically with laser, an electrosurgical wire loop, or rollerball. Other techniques for endometrial ablation include thermal balloon, hot saline instillation, cryotherapy, radiofrequency electrosurgery, and microwave energy. With the exception of radiofrequency electrosurgery, pretreatment of the endometrium with medical therapy or a dilation and curettage is advisable as most of the devices only ablate to a depth of 4 to 6 mm [76].

Satisfaction with global endometrial ablation ranges from 70% to 80% [77]. In a 5-year follow-up of women randomized to medical therapy or endometrial ablation, 77% in the medical group had undergone surgery compared to 27% in the ablation group. Women receiving medical therapy

were also significantly less satisfied [78]. Compared to levonorgestrel IUDs, quality of life and satisfaction are similar to women undergoing ablation at 1 year. While effectiveness is greater for ablation at 1 year, by years 2 and 3 there appears to be no difference between IUDs and ablation [79,80]. As compared to hysterectomy, a 5-year follow-up study showed that 34% of women who had had an ablation procedure subsequently underwent a hysterectomy [81]. Endometrial ablation is, however, associated with less morbidity and shorter recovery periods so should be considered in a carefully counseled patient.

Contraception is necessary after endometrial ablation in any premenopausal sexually active woman. Pregnancies after ablation complicated by uterine rupture and placenta accreta have been reported [82]. Insertion of a levonorgestrel-releasing IUD at the time of ablation provides effective contraception and may increase the rate of amenorrhea from that of the procedure alone [83].

For those patients with continued heavy bleeding despite hormonal or minimally invasive surgical therapy, hysterectomy remains the definitive treatment. The approach can be laparoscopic, abdominal or vaginal and is dependent on the patient and surgeon's preference, patient anatomy, and underlying pathology.

CONCLUSION

Heavy menstrual bleeding is a common condition. The severity of symptoms is frequently best assessed by the woman. A variety of medical and surgical approaches are available. Our patient with idiopathic bleeding has had an acceptable response to a levonorgestrel-containing IUD. The side effect of spotting for several weeks or months is not unexpected and is self-limited. Had the IUD not been accepted, she would have had the option of other hormonal treatments. She also would have the option of endometrial ablation, or possibly uterine artery embolization. Treatment should be selected that addresses the likely cause of the bleeding and that is unlikely to cause undesirable side effects.

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