

Fibroids: Main Cause of Abnormal Bleeding

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ABSTRACT

Premenopausal women show a very usual symptom of abnormal bleeding. Its definition is as follows: uterine bleeding is when the frequency, duration, and amount of bleeding are very high. Due to this bleeding, a woman's psychological well-being is disturbed, and the quality of life is hindered. It is associated with poor health, decreased productivity, and financial loss. These are the most common types of tumours that are present in women. Around 2–3% of the women face infertility issues due to these fibroids. Premenopausal women have a very usual symptom showing a type of tumour that is benign. Abnormal uterine bleeding is a vast spectrum, which requires correct diagnosis and proper treatment. Multiple modalities are available, but the best option is surgery.

Keywords: Abnormal bleeding, Hysterectomy, Infertility, Perimenopause, Uterine fibroids.

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INTRODUCTION

The abnormal bleeding from the uterus occurs for a longer time than usual menstruation; bleeding can be heavy or light. In today's fast-paced world and changed lifestyle, about 1/3rd of women are facing issues of obesity, irregular menstruation, uterine bleeding and uterine fibroids.¹

Abnormal uterine bleeding is also caused in young girls before menarche; some of its causes are due to trauma, shock, foreign body, irritation to genital areas or urinary tract infections, or sexual abuse. In adolescent girls, it can occur due to irregular ovulation. In teens and premenopausal women, it can occur due to pregnancy and an abrupt increase in hormone levels due to ovulation. Some women experience excessive blood loss during periods, which can be due to uterine adenomyosis like endometrium growing into the myometrial lining, uterine fibroids like benign masses in the myometrium, and endometrial polyps. These are tumours made up of nonstriated muscle cells and fibrous connective tissue. These are not cancerous, and they never turn cancerous. These are called leiomyomas or myomas. These are of varied sizes, and these vary in number. Some are as small as a grain of rice, whereas some grow in size just like a grapefruit. Some of the usual symptoms include heavy and painful menstruation, constipation and bloating, pain and discomfort while micturition and long duration of periods.²

Uterine fibroids also lead to infertility in 2–3% of women. They are the most common tumour in women. As women's age increases, their natural fertilisation turns less and pregnancy is avoided. Consequently, the couples use assisted reproductive technology (ART).³

Sometimes hysterectomy has to be performed. Hysterectomy is referred to as the removal of the uterus by surgery as a whole or some part of it. The surgeon may also remove the ovaries and cervix.

There are two types: Partial hysterectomy, in which the complete uterus is removed and the cervix is not removed. Total hysterectomy, in which both the uterus and cervical canal are removed.

These surgeries are performed based on the patient's medical history, their preferences, etc.

Some other techniques included in this process are as follows: Laparoscopic hysterectomy, in which doctors view the uterus by

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making small incisions in the abdomen, and then the uterus is removed through the vagina. When the uterus is large, it is removed from the abdomen. These surgeries recover faster as compared to open surgeries. Robotic-assisted hysterectomy is a type of surgery that uses special tools and machinery, and large incisions are avoided. The patient recovers faster, and the recovery is less painful as compared to others. A vaginal hysterectomy is a type in which there is no incision on the abdomen, but an incision is made in the vagina. Recovery time is shortened, and there are no abdominal scars. It is also less painful afterwards. Abdominal hysterectomy is an open surgery. In this, the entire uterus is removed by making an incision in the abdomen. With the help of this hysterectomy, the surgeon can view the other organs, which is beneficial in cases of large fibroids and other complications.⁴

REVIEW

Uterine Fibroids

These benign tumours originate from one genetically changed myometrial stem cell under the impact of gonadal hormones. These are present in a wide variety of symptoms. However, they represent the most usual solid tumour in premenopausal women.⁵

Abnormal Bleeding in the Uterus

The shortened form PALM-COEIN classifies the abnormal bleeding. PALM refers to structural aetiologies like malignancy, hyperplasia, polyp, leiomyoma and adenomyosis, whereas COEIN refers to

non-structural aetiologies, such as endometrial, ovulatory dysfunction, coagulopathy and iatrogenic, not otherwise classified.⁶

Polyp: The condition lasts a lifetime of endometrial polyps, ranging from 8 to 35%. Their occurrence increases with age. Many polyps show no symptoms. There are unremarkable physical examination findings, except for cases where the polyps prolapse through the cervix.⁷

Adenomyosis: This is the presence of endometrium in the myometrial lining. This condition ranges from 5 to 70%. Many females have no symptoms. However, those with symptoms have reported painful, prolonged and heavy menstrual bleeding. Symptoms commonly include pelvic pain and menorrhagia. Its present symptoms are not very specific. These are also observed in other disorders, such as endometriosis, uterine bleeding, etc. Leiomyoma and adenomyosis exist within the same uterus. Hence, the symptoms of both of these conditions can be dangerous.⁸

Leiomyoma: These benign tumours are called fibroids originating from the myometrium. This condition increases with age and is found in 80% of women.⁹ These are asymptomatic as well, but bleeding is the most common symptom, which involves prolonged and heavy menstruation. The women with fibroids show no symptoms.¹⁰

Malignancy: It is also the most common symptom of endometrium cancer.

Coagulopathy: On average, 20% of females with heavy menstrual bleeding suffer from this disorder. In 90% of women, haemostasis is seen. Some biomarkers are clearly defined. These biomarkers are measurements of coagulation factor, partial prothrombin time, platelet function test, fibrinogen, prothrombin time, D-dimer, thrombin time, etc.^{11,12}

Ovulatory dysfunction: Endocrine disorders lead to ovulatory dysfunction. Menstrual bleeding is often irregular, prolonged and heavy flow. Anovulation is seen at a very high age, in addition to some disorders such as polycystic ovarian disease (PCOD) and low thyroid levels, along with factors such as weight gain, stress, excessive exercise, and drugs that interfere with the hypothalamic-pituitary-ovarian axis.¹³

Endometrial iatrogenic: Uterine bleeding is the most common cause of this condition. Other causes include non-contraceptive hormone therapy, drugs, etc. The endometrium is a layer of multicellular tissue that lines the uterus and helps interact with the endocrine, vascular and immune systems. Based on external appearance, i.e., morphology, it is divided into basal and functional layers. The functional layer lines the upper part of the endometrium. When endometrium undergoes reparation, mitosis takes place in this layer. It is a very active layer consisting of glands supported by stroma. Studies show that the basal layer does not serve as a source of stem cells for endometrium regeneration.¹²

Differential Diagnosis: Abnormality in Bleeding

- Flooring curdling.
- Anticoagulant.
- Antipsychotic.
- Copper intrauterine device.
- Hormonal contraception.
- Tamoxifen.
- Acute or chronic endometriosis.
- Pelvic inflammatory disease.
- PCOD.
- Starvation.
- Thyroid disorders.⁶

Pathophysiology

The uterus is supplied by the ovarian and the uterine arteries. These arteries further divide to form the arcuate arteries, which supply the endometrial lining and the other basalis layers of the uterus. At the termination of each menstruation, progesterone levels reduce, and this leads to the breakdown of the endometrium of the uterus, which leads to bleeding and shedding. Derangement in the clotting pathways, such as iatrogenically or coagulopathies, or destruction of the hypothalamic-pituitary-ovarian axis through endocrine disorders/ovulatory/iatrogenically affects the menstrual cycle, and this leads to abnormalities of bleeding in the uterus and the structure of uterus such as polyps, malignancy, adenomyosis, leiomyoma, hyperplasia, coagulatory disorders, endometrial bleeding, etc.¹⁴

Genetics can also be one of the leading causes of the development of fibroids. The whole female genital tract develops from various courses like transcription, etc. The relationship between hormones in the endometrium and the myometrium should be regulated to achieve pregnancy. One of the most important key features in the formation of tumours is gene defect.¹⁵

History

The physician should always get an entire detailed history of the patient whose complaints are related to menstruation. Some distinct aspects of the history include:

Menstrual history includes age at menarche and age at menopause, frequency, flow and duration of the menstrual cycle. Family history, which includes questions such as carcinoma and endocrine disorders.

Reproductive and sexual history, such as number of pregnancies, mode of delivery, current contraception.

Symptoms like reduction in weight, discharge, anaemia, bowel and bladder symptoms, pain, and signs of endocrine disorders. Current medications are any.¹⁴

Physical Examination

- Vitals such as blood pressure, body mass index (BMI), body temperature, height and weight.
- Pallor on skin and mucous membranes.
- Examination of thyroid.
- Increased or abnormal patterns of hair growth.
- Acne.
- Hyperandrogenism.
- The distribution of fat is abnormal.
- Signs of coagulopathies.
- Examination of the pelvis.¹⁴

Tests Done in Laboratory

All the patients suffering from abnormal uterine bleeding should be examined by:

- Anaemia test.
 - Thrombocytopenia test.
 - Complete blood count test.¹⁶
 - Thyroid function test only if the patient has a history of thyroid.¹⁷
 - Hormonal tests like prolactin, oestrogen, androgens and testosterone.¹³⁻¹⁷
 - Prothrombin time, platelet count, and partial thromboplastin can be done initially when a bleeding disorder is detected.¹⁸
- The risk of endometrial cancer is very high in patients of older age, more than 45 years, and should undergo endometrium sampling.¹¹ Office-based biopsy of the endometrium lining is preferred along with hysteroscopic dilation.¹⁹

Treatment

Treatment for abnormal bleeding is dependent on various factors like clinical stability of the patient, fertility desire, aetiology of abnormal uterine bleeding and other medical diseases. Treatment has to be strictly based on these factors mentioned above. The treatment for acute abnormal bleeding can be hormonal methods. Intravenous (IV) conjugated oestrogen, oral progestins, oral contraceptive pills.

Emergent Treatment

Sometimes, abnormal bleeding is prolonged and requires heavy flow, requiring immediate attention. For unstable patients, we can use uterine tamponade using a Foley catheter or gauze packing for quick and temporary control of blood loss.²⁰

Nonemergent Treatment

A vast range of surgical and medical treatments are available for the treatment of nonemergent bleeding of the uterus. Management of medicines is the first approach for almost all of the patients. It is helpful for those who want to avoid surgical risks and preserve fertility.²¹ Around 20 µg per day of Levonorgestrel-releasing-intrauterine system is the most beneficial drug used to reduce menstrual bleeding. It is said to reduce 70–90% of blood loss. It is as effective as a hysterectomy. Oestrogen-progestin oral contraceptives and continuous dosing of oral progestins are very effective and help to regulate bleeding.⁶ Oral tranexamic acid and nonsteroidal anti-inflammatory drugs are two well-tolerated non-hormonal drugs that are very effective.

Surgical Management

Hysterectomy is the most effective and the most definitive treatment for abnormal uterine bleeding. There are two types of hysterectomies:

Total hysterectomy is defined as the removal of the uterus and the cervix completely.

Partial or supracervical hysterectomy is defined as the removal of the uterus but the cervical canal is kept intact.

Several techniques for performing hysterectomies are as follows:

Laparoscopic hysterectomy: The surgeons view and approach the pelvis through small incisions on the abdomen. The uterus is removed through the vagina. Sometimes, when the uterus is large, it is removed through the incisions in the abdomen. These surgeries recover faster and have minimal complications. **Robot-assisted hysterectomy:** These surgeries use special tools, and large incisions are prevented. Recovery is significantly faster as compared to others and is also much less painful.

Vaginal hysterectomy: The uterus is extracted through an incision, which is given in the vagina, and no incisions are made on the abdomen.

Abdominal hysterectomy: The entire uterus is removed through an incision in the abdomen. This method is beneficial in cases of fibroids or some other complications.⁴

Radiological Procedures

Embolisation of Uterine Artery

It is an intrusive angiographic technique. It uses tris-acryl gelatin microspheres. It interrupts the blood supply of the uterus, which causes ischaemic necrosis to the fibroid.²² This procedure treats

the entire uterus. It is a concise procedure, and the recovery rate is very fast.

Magnetic Resonance Imaging

It is a magnetic resonance procedure that focuses on radiofrequency ablation. It is a high-intensity ultrasound. It uses high-intensity ultrasound waves to cause fibroid necrosis.²³

Infertility

Uterine fibroids are the main root of infertility in about 1–5% of the women. Women with fibroids in any location have remarkably decreased rates of pregnancy. There is a risk of infertility when the endometrium is disintegrated. Fibroids are of various types based on their location and impact on fertility. Subserosal fibroids do not affect women's fertility.

On the contrary, intramural fibroids and submucosal fibroids destroy the endometrium cavity, decreasing implantation chances. Moreover, when the submucosal fibroids distort the endometrium, infertility risk increases – several mechanisms, such as chronic inflammation, high uterine contractions, etc.

Affects implantation.

Dietary Intake

The development of fibroids has no specific relationship with food rich in high fibre. However, some studies fail to prove the relationship between myoma and the intake of cereals.^{24–26} Some researchers have proven soya to influence uterine fibroids' pathogenesis.^{27,28} People consuming caffeinated drinks and alcohol are at a higher risk of various diseases, but the risk of uterine fibroids is still very controversial.²⁹ Proteins and dairy products have many physiological functions, but their relationship with the risk of fibroids is not investigated adequately.³⁰ Dietary patterns vary in the type of nutritional constituents they contain. Whole grains such as wheat, brown rice and barley are very nutritious and high in fibre, vitamins and minerals. These play a remarkable role in modulating immune system reactions.

On the other hand, nuts and dried fruits are rich in healthy fats and reduce the risks of coronary artery diseases, diabetes mellitus and obesity. Vegetables and fruits are well-known sources of various nutrients such as fibres, minerals, b-b-carotene and fat-soluble vitamins. Meat is a very high source of protein. On the other hand, fish provide omega and minerals, reducing coronary-artery disease risk. Green tea is widely used as it has a lot of beneficial effects.³¹

CONCLUSION

Abnormal bleeding is one of the most typical symptoms seen in perimenopausal women. It is not fatal; that is, it cannot cause death, but it should be treated on time to prevent carcinoma. As mentioned above, various treatment methods have come up due to technological improvements. The use of several types of drugs is seen to be very effective in treating bleeding. The new ones are replacing old, invasive methods. New types of hysterectomies, such as robot-assisted hysterectomy, are very useful and painless. Dietary habits should also be controlled along with lifestyle modification, which is essential to practice in everyday life. Abnormal eating habits should be improved so that this condition can be prevented. This condition is not very harmful, but if neglected and not treated on time, it can become dangerous and cause carcinoma.

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