

A Review on Uterine-Fibroid-Women Struggle

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Abstract: *Fibroids are an important public health concern, both because of the large number of women affected by them and the large number of hysterectomies undertaken to treat the symptoms they cause. Uterine fibroids are the most common benign tumors in women of childbearing age. Fibroids are made of muscle cells and other tissues that grow in and around the wall of the uterus, or womb. Fibroids, known technically as leiomyomata, can vary in size and number and may be accompanied by infertility, miscarriage, and early onset of labor. Most American women will develop fibroids at some point in their lives. One study found that, by age 50, 70 percent of whites and 80 percent of African Americans had fibroids. In many cases, fibroids are believed not to cause symptoms, and in such cases women may be unaware they have them. Although various therapies are used to treat symptoms, including drugs or surgical removal of individual fibroids, when the condition is painful or the number of fibroids is great, doctors may advise surgery to remove the uterus—a hysterectomy. More than 200,000 hysterectomies are performed each year for uterine fibroids. Annual direct health care costs for uterine fibroids exceed \$2.1 billion.*

Keywords: Leiomyomas, Hysteroscopy, Myomectomy, Endometrial ablation, fibroids

1. Introduction

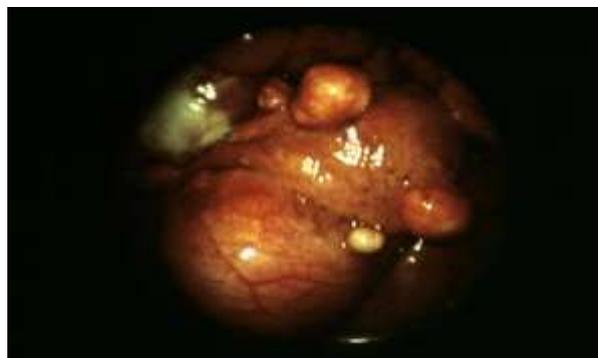
Uterine leiomyomas also called fibroids and myomas, are a neoplastic disease characterized by abundant amounts of extracellular matrix synthesis and deposition. These tumors are hormonally responsive and grow under the influence of ovarian sex steroids. Clinically, uterine leiomyomas may cause compression of neighboring organs, abnormal menses, pelvic pain, increased urinary frequency, and in the most severe cases they may lead to infertility [1-4]. Fibroids are abnormal growths that develop in or on a woman's uterus. Sometimes, these tumors become quite large and cause severe abdominal pain and heavy periods. In other cases, they cause no signs or symptoms at all. According to the National Institutes of Health (NIH), about 70 to 80 percent of women have them by the age of 50. [5]

Uterine fibroids are the most common benign pelvic tumor in women with a 70–80% cumulative incidence during childbearing years. African-Americans develop fibroids at younger ages than Caucasians and they tend to persist to menopause. [6] Fibroids tend to regress in size before menopause in Caucasian women. The etiology remains elusive although progress has been made. Previously reported similarities between fibroids and keloids [7;8] corroborate with recent findings[9].Fibroids cells secrete high levels of collagen and resist apoptosis. Ranging in location and size, growth is influenced by female gonadal steroids by apocrine and paracrine mechanisms[10]. In more than 99 percent of fibroid cases, the tumors are benign (non-cancerous). These tumors are not associated with cancer and do not increase a woman's risk for uterine cancer. They may range in size, from the size of a pea to the size of a softball or small grapefruit.[11]

Uterine leiomyoma (UL) is the most prevalent benign gynecological tumor. From 100 women, 80 present this

tumor; however, only around 30% will report symptoms [12]. Fibroids affect at least 20 percent of all women at some point in their life. Women of reproductive age are the most likely to develop them. Also, overweight and obese women have a significantly higher risk of developing fibroids, compared with women of normal weight[13;14]

However, despite this, there are currently no approved drugs that can provide effective, long-term treatment for these tumors. In the year 2010, the estimated annual cost of uterine fibroid tumors in the United States was \$5.9–34.4 billion (15). Although uterine fibroids are the most common tumors of the female reproductive tract and a major quality of life issue for a significant percentage of women, the mechanisms that initiate leiomyoma growth and pathogenesis are still not well understood. Several genetic and environmental risk factors have been suggested to influence the etiology of leiomyomas (16-19).

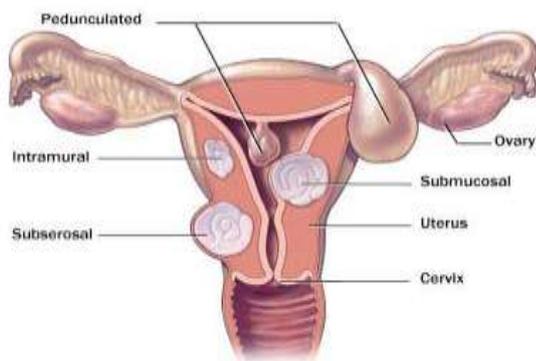


2. Types of Fibroids

Growth and location are the main factors that determine if a fibroid leads to symptoms and problems.^[20]A small lesion can be symptomatic if located within the uterine cavity

while a large lesion on the outside of the uterus may go unnoticed. Different locations are classified as follows:^[21]

- **Intramural** fibroids are located within the wall of the uterus and are the most common type; unless large, they may be asymptomatic. They begin as small nodules in the muscular wall of the uterus. With time, intramural fibroids may expand inwards, causing distortion and elongation of the uterine cavity.
- **Subserosal** fibroids grow on the outside of the uterus. As they grow larger, they can cause pain due to their size or pressure put on nearby organs. They are located underneath the peritoneal surface of the uterus and can become very large. They can also grow out in a papillary manner to become pedunculated fibroids. These pedunculated growths can actually detach from the uterus to become a parasitic leiomyoma.
- **Submucosal** fibroids grow just underneath the uterine lining and can crowd into the uterus cavity and lead to heavy bleeding and other more serious complications. They are located in the muscle beneath the endometrium of the uterus and distort the uterine cavity; even small lesions in this location may lead to bleeding and infertility. A pedunculated lesion within the cavity is termed an intracavitary fibroid and can be passed through the cervix.^[22,23]
- **Pedunculated fibroids** grow on small stalks that connects them to the inner and outer wall of the uterus^[24,25]
- **Cervical** fibroids are located in the wall of the cervix (neck of the uterus). Rarely, fibroids are found in the supporting structures (round ligament, broad ligament, or uterosacral ligament) of the uterus that also contain smooth muscle tissue^[23]
- **Interligamentous** fibroids grow between the uterine broad ligaments.
- **Parasitic Fibroids** Move and attach to other organs besides the uterus.^[26]



3. Causes of fibroids

While scientists are not definitely sure what causes fibroids, a few factors seem to be at play. It is possible that abnormalities in a woman's uterine blood vessels may cause fibroids to occur.

1) Genes:

Genes that cause uterine muscle cells to grow at an accelerated rate may be a cause. Fibroids seem to be related to a woman's reproductive cycle, rarely occurring before the first menstrual period and often accelerating during

pregnancy. Some scientists suggest that the hormones estrogen and progesterone may be involved.

2) Hormones

Estrogen and progesterone are the hormones produced by the ovaries. They cause the uterine lining to regenerate during each menstrual cycle and may stimulate the growth of fibroids.^[27]

An increase in lifetime exposure to estrogen:

There are many factors that increase a woman's lifetime exposure to estrogen. More than at any other time in history, women are exposed to more estrogen. This increased exposure can contribute to a wide variety of reproductive health problems including the development of uterine fibroids. The following factors increase a woman's lifetime exposure to estrogen:

- Early menarche – the longer a woman has her menstrual cycle, the longer estrogen levels are elevated
- Fewer pregnancies – many women today are restricting how many children they are having or are not having children at all, which increases their total exposure to estrogen
- High body fat content – body fat produces and stores estrogen; the more body fat a woman has the more estrogen
- Exposure to xenoestrogens – plastics, pesticides, herbicides, synthetic hormones in both meat and dairy products, and hormone replacement therapy (HRT) including oral contraceptives (birth control) containing synthetic estrogen
- Poor estrogen metabolism – some women's bodies have a harder time removing and metabolizing excess estrogen.^[22]

3) Heredity may also be a factor:

Women whose close relatives have had fibroids have a higher risk of developing them.^[13]

In addition, the following factors may also play a role in the development of uterine fibroids:

- Hypertension
- Infection complications from IUD use
- Perineal talc use
- Anovulatory cycles
- Endometrial hyperplasia (common in women with PCOS)^[22]
- There is also some evidence that red meats, alcohol, and caffeine could increase the risk of fibroids.^[13]

4) Symptoms

Uterine leiomyoma (UL) is the most prevalent benign gynecological tumor. From 100 women, 80 present this tumor; however, only around 30% will report symptoms.^[12]

Some women who have fibroids have no symptoms, or have only mild symptoms, while other women have more severe, disruptive symptoms. The following are the most common symptoms for uterine fibroids, however, each individual may experience symptoms differently. Symptoms of uterine fibroids may include:

- Heavy or prolonged menstrual periods
- Abnormal bleeding between menstrual periods

- Pelvic pain (caused as the tumor presses on pelvic organs)
- Frequent urination
- Low back pain
- Pain during intercourse
- A firm mass, often located near the middle of the pelvis, which can be felt by the physician

In some cases, the heavy or prolonged menstrual periods, or the abnormal bleeding between periods, can lead to iron-deficiency anemia, which also requires treatment.^[11]

Other possible symptoms of uterine fibroids include:

- Labor problems
- Pregnancy problems
- Fertility problems
- Repeated miscarriages^[13]

5) Diagnosis

Fibroids are most often found during a routine pelvic examination. This, along with an abdominal examination, may indicate a firm, irregular pelvic mass to the physician. In addition to a complete medical history and physical and pelvic and/or abdominal examination, diagnostic procedures for uterine fibroids may include:

- **X-ray.** Electromagnetic energy used to produce images of bones and internal organs onto film.
- **Transvaginal ultrasound (also called ultrasonography).** An ultrasound test using a small instrument, called a transducer, that is placed in the vagina.
- **Magnetic resonance imaging (MRI).** A non-invasive procedure that produces a two-dimensional view of an internal organ or structure.
- **Hysteroscopy.** Visual examination of the canal of the cervix and the interior of the uterus using a viewing instrument (hysteroscope) inserted through the vagina.
- **Endometrial biopsy.** A procedure in which a sample of tissue is obtained through a tube which is inserted into the uterus.^[11]
- **Hysterosonography:** Hysterosonography (his-tur-o-suh-NOG-ruh-fee), also called a saline infusion sonogram, uses sterile saline to expand the uterine cavity, making it easier to get images of submucosal fibroids and the endometrium.^[28]
- **Hysterosalpingography:** Hysterosalpingography (his-tur-o-sal-ping-GOG-ruh-fee) uses a dye to highlight the uterine cavity and fallopian tubes on X-ray images. Your doctor may recommend it if infertility is a concern. In addition to revealing fibroids, it can help your doctor determine if your fallopian tubes are open.^[28]
- **Laparoscopy** - a laparoscope is a small flexible tube used to examine the outside of the uterus. During this procedure, if necessary, a biopsy can be taken from the outer layer of the uterus. This is a surgical procedure that would require cutting through the skin.^[29]
- **Blood test** (to check for iron-deficiency anemia if heavy bleeding is caused by the tumor).^[11]



4. Complications associated with fibroids

It is important to stress that in the vast majority of cases, fibroids do not result in complications for patients. However, for a tiny minority, they do. Complications may include:

- **Menorrhagia** (heavy periods) - the most common complication is a disruption of the woman's ability to function normally when periods are present, and also the possibility of depression because of this. In some cases, menorrhagia can lead to anemia and fatigue.
- **Abdominal pains** - if the patient's fibroids are large, she may experience swelling and discomfort in the lower abdomen. She may also have a sensation of being constipated. Some women with large fibroids say their bowel movements are painful.
- **Premature birth, labor problems, miscarriages** - as estrogen levels rise significantly during pregnancy, and as estrogen can speed up fibroid growth, some women may experience early labor, miscarriages, or complications during labor.
- **Infertility** - in some cases, fibroids can make it more difficult for the fertilized egg to attach itself to the lining of the uterus. A fibroid that grows outside the uterus (submucosal fibroid) may change the uterus' shape, making it harder for the woman to get pregnant.
- **Leiomyosarcoma** - this is extremely rare. This is a form of cancer, and it can develop inside the fibroids.^[13]

Treatment

Treatment choices will depend on:

- The size of the fibroids
- Number of fibroids
- The location of fibroids
- The symptoms you're having^[30]

Surgical Treatment:

The current surgical treatments for fibroids are listed below.^[31-34]

- Endometrial Ablation
- Myomectomy
- Hysterectomy.

1. Endometrial Ablation

- Endometrial ablation (pronounced *en-doh-MEE-tree-ul-ah-BLAY-shun*) destroys the lining of the uterus. It is used to treat small fibroids inside the uterus. Two common ways of doing an ablation are with a heated balloon, and

with a tool that uses microwave energy to destroy the uterine lining and fibroids.

- Pregnancy is unlikely after this procedure, but it can happen. Women who get pregnant after endometrial ablation are at higher risk for miscarriage and other problems. If you are going to have this treatment, talk to your health care provider about the risks of getting pregnant after the procedure. You might want to use birth control to prevent pregnancy until after you go through menopause.^[35-36]

2. Myomectomy

This procedure removes only the fibroids and leaves the healthy areas of the uterus intact. It can preserve your ability to get pregnant.

Myomectomy can be performed in one of three ways. The method you need will depend on the location and size of your fibroids.

- Hysteroscopy (pronounced *hiss-tur-AH-skoh-pee*). For this procedure, the surgeon inserts a long, thin telescope with a light through the vagina and cervix (the opening of the uterus). The doctor then uses electricity or a mechanical device to cut or destroy the fibroids. The doctor will inject a fluid into the uterus to make it easier to see before trying to remove the fibroids.
- Laparotomy (pronounced *lap-are-AH-toh-mee*). The surgeon removes the fibroids through a cut in the abdomen.
- Laparoscopy (pronounced *lap-are-AH-skoh-pee*). The surgeon uses a long, thin telescope to see inside the pelvic area, and then removes the fibroids using another tool. This procedure usually involves two small cuts in the abdomen.

Studies show that myomectomy can relieve fibroid-related symptoms in 80% to 90% percent of patients.^[32] The original fibroids do not regrow after surgery, but new fibroids may develop.^[22]

3. Hysterectomy

Hysterectomy is the only sure way to cure uterine fibroids completely. Health care providers usually recommend this option if your fibroids are large, you have very heavy bleeding, and you are near or past menopause.

During a hysterectomy, the whole uterus or just part of it is removed. The types of hysterectomy include:

- 1) **Subtotal, or partial, hysterectomy.** In this procedure, only the upper part of the uterus is removed.
- 2) **Total hysterectomy.** The entire uterus and the cervix are removed. Sometimes the ovaries and fallopian tubes are also removed. This procedure is called a total hysterectomy with bilateral salpingo-oophorectomy (pronounced *bye-LATT-ur-el sal-PING-go ooh-for-EK-toh-mee*).
- 3) **Radical hysterectomy.** This procedure removes the uterus, the tissue on both sides of the cervix, and the upper part of the vagina.^[37]
- 4) **Abdominal hysterectomy.** The surgeon removes the uterus through a cut in the abdomen. This incision may be similar to what is done during a cesarean section. Full recovery time from an abdominal hysterectomy is one to two months.^[36] Removal of the ovaries is not required for

treatment of fibroid symptoms. Similarly, some women may desire to preserve the cervix, if there is no history of abnormal pap smears.^[37]

- 5) **Vaginal hysterectomy.** Instead of making a cut into the abdomen, the surgeon removes the uterus through the vagina. This method is less invasive than an abdominal hysterectomy, so recovery time is usually shorter. Vaginal hysterectomy may not be an option if your fibroids are very large.
- 6) **Laparoscopic hysterectomy.** Minimally invasive approaches may include laparoscopic hysterectomy, laparoscopic-assisted vaginal hysterectomy, or robotic-assisted laparoscopic hysterectomy. Not all cases of uterine fibroids can be treated with such approaches, but these methods may result in reduced postoperative recovery time.
- 7) **Robotic hysterectomy.** Robotic hysterectomy is becoming more common. The surgeon sits at a console near the patient and guides a robotic arm to perform laparoscopic surgery. Like laparoscopic myomectomies, this technique requires only small incisions in the uterus and abdomen. As a result, recovery can be shorter than with more invasive procedures. More research is needed to understand how (and how well) these procedures work and to compare the outcomes with those of other established surgical treatments.^[22]

II) Non-Surgical Treatment

Certain procedures can destroy uterine fibroids without actually removing them through surgery. They include:

- **Uterine artery embolization.** Small particles (embolic agents) are injected into the arteries supplying the uterus, cutting off blood flow to fibroids, causing them to shrink and die. This technique can be effective in shrinking fibroids and relieving the symptoms they cause. Complications may occur if the blood supply to the ovaries or other organs is compromised.
- **Myolysis.** In this laparoscopic procedure, radiofrequency energy, an electric current or laser destroys the fibroids and shrinks the blood vessels that feed them. A similar procedure called cryomyolysis freezes the fibroids.
- **Laparoscopic or robotic myomectomy.** In a myomectomy, removal of fibroids occur, leaving the uterus in place. If the fibroids are small and few in number, it is opt for a laparoscopic or robotic procedure, which uses slender instruments inserted through small incisions in the abdomen to remove the fibroids from the uterus. The fibroids are removed by breaking them into smaller pieces, a process called morcellation.

The abdominal area is monitored using a small camera attached to one of the instruments. Robotic myomectomy gives a magnified, 3-D view of the uterus, offering more precision, flexibility and dexterity than is possible using some other techniques.^[37]

- **Endometrial ablation.** This treatment, performed with a specialized instrument inserted into the uterus, uses heat, microwave energy, hot water or electric current to destroy the lining of the uterus, either ending menstruation or reducing your menstrual flow.

Typically, endometrial ablation is effective in stopping abnormal bleeding. Submucosal fibroids can be removed at

the time of hysteroscopy for endometrial ablation, but this doesn't affect fibroids outside the interior lining of the uterus.^[37]

- **ExAblate – Focused Ultrasound Therapy (MRgFUS)**
A relatively new way to eliminate uterine fibroids is through a non-invasive technique using high doses of focused ultrasound waves (HIFU). This procedure destroys the uterine fibroids without damaging the surrounding uterine tissue. As an outpatient procedure, doctors perform ExAblate in a magnetic resonance imaging (MRI) scanner, which allows the doctor to “see” inside of the body and target the uterine fibroids with HIFU.

Because ExAblate is a newer procedure, it is not available everywhere, it is only available in select countries and states in the U.S. In addition, not all health insurance plans cover MRgFUS.

5. Medications (Hormonal)

Medications for uterine fibroids target hormones that regulate your menstrual cycle, treating symptoms such as heavy menstrual bleeding and pelvic pressure. They don't eliminate fibroids, but may shrink them. Medications include:

1. Gonadotropin-releasing hormone (Gn-RH) agonists. Medications called Gn-RH agonists (Lupron, Synarel, others) treat fibroids by blocking the production of estrogen and progesterone, putting you into a temporary postmenopausal state. As a result, menstruation stops, fibroids shrink and anemia often improves. Your doctor may prescribe a Gn-RH agonist to shrink the size of your fibroids before a planned surgery. Many women have significant hot flashes while using Gn-RH agonists. Gn-RH agonists typically are used for no more than three to six months because symptoms return when the medication is stopped and long-term use can cause loss of bone.

2. Progestin-releasing intrauterine device (IUD). A progestin-releasing IUD can relieve heavy bleeding caused by fibroids. A progestin-releasing IUD provides symptom relief only and doesn't shrink fibroids or make them disappear. It also prevents pregnancy.^[37]

3. Levonorgestrel intrauterine system (LNG-IUS)
The levonorgestrel intrauterine system (LNG-IUS) is a small, plastic, T-shaped device placed in your womb that slowly releases the progestogen hormone levonorgestrel. It stops your womb lining growing quickly, so it's thinner and your bleeding becomes lighter.

Side effects associated with LNG-IUS include:

- Irregular bleeding that may last for more than six months
- acne
- headaches
- Breast tenderness
- In some cases, no periods at all (absent periods)

Lng-ius also acts as a contraceptive, but doesn't affect your chances of getting pregnant after you stop using it.

4. Tranexamic acid

If LNG-IUS is unsuitable – for example, if contraception isn't desired – tranexamic acid tablets may be considered. They work by stopping the small blood vessels in the womb lining bleeding, reducing blood loss by about 50%.

Tranexamic acid tablets are taken three or four times a day during your period for up to four days. Treatment should be stopped if the symptoms haven't improved within three months.

Tranexamic acid tablets aren't a form of contraception and won't affect your chances of becoming pregnant. Indigestion and diarrhoea are two possible side effects of tranexamic acid tablets.^[38]

The contraceptive pill - oral contraceptives helps to regulate the ovulation cycle, and may help reduce heavy menstrual bleeding associated with fibroids when a woman is on her period.

6. Anti-inflammatory drugs - including mefenamic and ibuprofen. Anti-inflammatory medications reduce the production of prostaglandins, which are normally associated with heavy periods. Anti-inflammatory drugs are also painkillers. They do not affect fertility.^[37]

7. Oral progestogen

Oral progestogen is synthetic (man-made) progesterone (one of the female sex hormones) that can help reduce heavy periods. It's usually taken as a daily tablet from days five to 26 of your menstrual cycle, counting the first day of your period as day one.

Oral progestogen works by preventing the womb lining growing quickly. It's not a form of contraception, but it can reduce your chances of conceiving while you're taking it.

The side effects of oral progestogen can be unpleasant and include weight gain, breast tenderness and short-term acne.

8. Injected progestogen

Progestogen is also available as an injection to treat heavy periods. It works by preventing the lining of your womb growing quickly.

This form of progestogen can be injected once every 12 weeks for as long as treatment is required.

Common side effects of injected progestogen include:

- Weight gain
- Irregular bleeding
- Absent periods
- Premenstrual symptoms, such as bloating, fluid retention and breast tenderness

Injected progestogen also acts as a contraceptive. It doesn't prevent you becoming pregnant after you stop using it, although there may be a significant delay (up to 12 months) after you stop taking it before you're able to get pregnant.^[38]

6. Herbal Remedies for Uterine Fibroids

Herbs can effectively address the underlying reasons for fibroid growth so the body can restore health naturally. Diet, lifestyle and vitamins can also play an important role. What makes herbalists so successful when working with women with fibroids is that they don't actually treat or diagnose fibroids. Instead they work to restore overall health where there is imbalance.

• Pelvic Decongestants for Uterine Fibroids

These herbs move stagnation in the pelvis by acting on the lymphatic system, improving liver function or by toning the uterus itself. Some of these herbs are best taken internally while some can be used externally to promote movement in the pelvis.

• Hepatic Herbs for Fibroids

These herbs specifically address liver function. Poor liver function is often seen as a root cause of uterine fibroids. Poor liver function can result in toxin build-up in the body as well as poor hormone clearance, resulting in imbalanced hormones.

• Antispasmodic Herbs for Fibroids

Antispasmodic herbs can be used to relax muscle fibers and thereby decrease pain associated with fibroids.

• Nourishing Herbs for Fibroids

Herbs high in iron, magnesium and calcium can address anemia and help prevent excessive blood loss.

• Styptic Herbs for Uterine Fibroids

These herbs can stop excessive menstrual bleeding.

• Adaptogen Herbs for Uterine Fibroids

Adaptogen herbs address the HPO axis and can support the overall health of the endocrine system. (Women with uterine fibroids often have estrogen dominance.)

• Other Natural Remedies for Fibroids

Insulin resistance may be a contributing factor to uterine fibroids. See my article for more information on how to address insulin resistance naturally. Low Vitamin D3 levels have been associated with fibroids. Getting tested and then using appropriate sunshine exposure and/or supplements may be necessary. Mayan Abdominal Massage can be an important tool to encourage a healthy uterus and pelvis.^[39]

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