

Uterine Fibroids



Uterine fibroids are non-cancerous tumors that grow within the wall of the uterus. 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.

Yesterday

- Very little was known about fibroids and how to prevent or medically treat them. The symptoms of fibroids resulted in lost days of work and were often treated with hysterectomy.

Today

- 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. The NIH conducts research on uterine fibroids, supports studies of fibroids at academic institutions, and sponsors interdisciplinary conferences where researchers share and discuss the results of their studies.
- Doctors now have a better understanding of fibroids and how they develop, based on research supported by the NIH. For example, researchers now know that fibroid growth is a dynamic process. Individual fibroids grow at different rates, and some shrink even without intervention.

- This work also has given researchers a better understanding of the uneven impact of this disease. Recent findings indicated that while fibroid growth rates are similar for African American and white women under 35, as women get older, growth rates decline for whites but not for African Americans. Another study found that among women receiving reproductive assistance, treatments were less successful for African Americans, who were more likely to have fibroids, than for their Caucasian counterparts
- Medical therapy is used for many women who have symptoms from fibroids and sometimes is used prior to surgery to shrink the fibroids. Commercially available drugs that shrink fibroids include gonadotropin-releasing hormones, which usually cause symptoms of menopause. Drugs that block the hormone progesterone can slow or stop the growth of fibroids. Some health care providers may use hormonal or over-the-counter medications to control pain and bleeding.
- For many years the NIH has also supported research into genetic factors that influence the development of fibroids. These studies have contributed to the idea that susceptibility to fibroids is passed on to a woman by her father. They have also given researchers clues to the identity of non-hormonal factors that guide fibroid growth.
- The availability of fibroid tissue, samples of which are stored in a bank that qualified investigators can access for free, is another important step toward advances in prevention and treatment made possible by the NIH. The NIH sponsors a tissue bank which maintains numerous samples of fibroid tissue for use in research studies. In FY 2007, with support from the Office of Research on Women's Health and the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), the Leiomyoma Tissue Bank (LTB) was created to address the problem of tissue availability and to promote research on this condition. Researchers can access the bank without charge. <http://clinicaltrials.gov/ct2/show/NCT00710346>

Tomorrow

- Although available treatments control symptoms and can shrink fibroids, only hysterectomy eliminates them completely. The NIH supports research into new technologies, drugs, and genetic therapies that seek to provide alternatives that spare a woman's fertility.
- NIH scientists are exploring the mechanisms responsible for fibroid development and growth. Their studies revealed that the connective tissue made by the cells in uterine fibroids is markedly abnormal and this abnormality may contribute to fibroid growth. Researchers continue to collect evidence indicating how natural processes of scarring and wound healing go awry.
- A preliminary NIH study tested the progesterone-blocking drug ulipristal acetate in a small group of volunteers and found that it reduced fibroid size and bleeding more effectively than a placebo. Volunteers also reported that their quality of life improved after taking the drug. Ongoing clinical trials continue to assess the effectiveness of the drug, which the Food and Drug Administration recently approved for use as an emergency contraceptive.
- Recent findings suggest fibroid tissue is made up of tangles of collagen and that hormone therapies may be ineffective at breaking them down. Studies using drugs to treat fibroids by breaking apart collagen or preventing it from forming are in the planning stages.
- Ongoing research aims to improve available treatments as well. An early study at the NIH showed that it is possible to shrink uterine fibroids by directing ultrasound waves at them, superheating the fibroids and destroying them while sparing the surrounding tissue. New research will compare the safety and effectiveness of embolization—therapy that blocks the blood supply to fibroid tissue—with that of MRI-guided ultrasound surgery to destroy the fibroid. The study will compare how well the treatments improve pain and reduce other symptoms in the long term.
- Several studies have also investigated the effects of diet on the growth of fibroids. Recent findings from a study of more than 22,000 African American women showed that women who consumed milk, cheese, ice cream, or other dairy products at least once a day were less likely to develop fibroids than were women who consumed dairy less frequently.
- Studies have shown that compounds from green tea inhibit the growth of rodent fibroid cells. A follow up study confirmed that these compounds also inhibited the growth of human fibroid cells and eventually increased the death rate of these cells.
- Growth factors are chemicals secreted by cells which stimulate other cells to increase in size and number and to differentiate into specialized types of cells. Growth factors typically bind to a special site, or location on the cell's surface. Once this binding has taken place, it triggers an elaborate sequence of chemical reactions within the cell that affect cell growth. NIH researchers have determined that fibroid cells depend on numerous different kinds of growth factors. Moreover, reproductive hormones like estrogen appear to stimulate cells to release growth factors. Researchers believe that inhibiting or blocking these growth factors may provide a means to slow or prevent the growth of fibroids. These researchers are also investigating whether exposure to pesticides or other chemicals that affect hormones might interact with growth factors and related chemical sequences to stimulate the growth of fibroids.
- The Second NIH International Congress on Advances in Uterine Leiomyoma Research (February 2005) reported many new research advances for the prevention, diagnosis and treatment of fibroids. A third NIH International Congress on Advances in Uterine Leiomyoma is planned for November 2010 (<http://www.nichd.nih.gov/about/meetings/2010/112310.cfm>).

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