



## What is Vaginal Cancer?

**Vaginal cancer** is a rare cancer of the female reproductive system. Only three percent of gynecological cancers are vaginal. The vagina (birth canal) is the corridor through which menstrual fluid leaves the body and babies are born. It is connected to the cervix (the opening of the uterus or womb) and the vulva (folds of skin around its opening). The vaginal walls have a thin layer of cells called the epithelium, which contains a type of cells called squamous epithelial cells. The vaginal wall, underneath the epithelium, consists of connective and involuntary muscle tissue, lymph vessels, and nerves.

Usually, the vagina is in a collapsed position with its walls touching. The walls have many folds that allow the vagina to open and expand during sexual intercourse and childbirth. The vaginal lining is kept moist by mucus released by glands in the cervix.

### Statistics

Vaginal cancer is rare. In the United States, approximately 2,160 new cases of vaginal cancer are expected to be diagnosed, and an estimated 790 women will die of the disease in 2004.

Cancer statistics should be interpreted with caution. These estimates are based on data from thousands of cases of this type of cancer in the United States and may not apply to a single person. It is not possible to tell a person how long she will live with vaginal cancer. Because the survival statistics are measured in five-year (or sometimes one-year) intervals, they may not represent advances made in the treatment or diagnosis of this cancer.

There are several types of vaginal cancers:

**Squamous Carcinoma** - Squamous cell cancer starts in the vagina's epithelial lining, most often in the area closest to the cervix. Squamous cancers make up 85 to 90 percent of vaginal cancers. It develops slowly through pre-cancerous changes called vaginal intraepithelial neoplasia (VAIN).

**Adenocarcinoma** - This cancer may develop in tissues of vaginal glands. It accounts for 5 to 10 percent of vaginal cancers

**Clear Cell Adenocarcinoma** - This cancer occurs in young women whose mothers took the drug diethylstilbestrol (DES) during pregnancy between the late 1940's and 1971. About one woman in 1,000 exposed to DES develops vaginal cancer.

**Melanoma** - Melanomas are the most serious type of skin cancer. They are usually found on skin exposed to the sun, but can begin on the skin of the vagina or other internal organs. Dark-colored tumors appear on the lower or outer parts of the vagina.

There are two types of cancer of the vagina: squamous cell cancer (squamous carcinoma) and adenocarcinoma. Squamous carcinoma is usually found in women between the ages of 60 and 80. Adenocarcinoma is more often found in women between the ages of 12 and 30.

Young women whose mothers took DES (diethylstilbestrol) are at risk for getting tumors in their vaginas. Some of them get a rare form of cancer called clear cell adenocarcinoma. The drug DES was given to pregnant women between 1945 and 1970 to keep them from losing their babies (miscarriage).

A doctor should be seen if there are any of the following:

- Bleeding or discharge not related to menstrual periods.
- Difficult or painful urination.
- Pain during intercourse or in the pelvic area.
- Also, there is still a chance of developing vaginal cancer in women who have had a hysterectomy.

A doctor may use several tests to see if there is cancer. The doctor will usually begin by giving the patient an internal (pelvic) examination. The doctor will feel for lumps and will then do a Pap smear. Using a piece of cotton, a brush, or a small wooden stick, the doctor will gently scrape the outside of the cervix and vagina in order to pick up cells. Some pressure may be felt, but usually with no pain.

If cells that are not normal are found, the doctor will need to cut a small sample of tissue (called a biopsy) out of the vagina and look at it under a microscope to see if there are any cancer cells. The doctor should look not only at the vagina, but also at the other organs in the pelvis to see where the cancer started and where it may have spread. The doctor may take an x-ray of the chest to make sure the cancer has not spread to the lungs.

The chance of recovery (prognosis) and choice of treatment depend on the stage of the cancer (whether it is just in the vagina or has spread to other places) and the patient's general state of health.

As we well know, there are many kinds of cancer; unfortunately they all come about because of the out-of-control growth of abnormal cells.

### **Healthy Cells vs. Cancer Cells**

Healthy cells are like a cat. They need structure to determine the size of bones and shape of the body, tail and whiskers. The DNA in genes and chromosomes determine this. They need energy to play and prowl and sustain life. This is derived from chemicals in food. Cats need a system to deliver chemicals (food nutrients like amino acids, carbohydrates, fats, vitamins and minerals) to all parts of their body. These are the blood

vessels. Growth factors take a kitten into a lazy old cat, all the while helping it to function normally.

The body and its cells are mostly made up of protein. The building blocks of proteins are substances called amino acids that in the form of enzymes and hormones literally control every chemical reaction within the cells. When these are modified, different messages are sent to a complex control system that can alter their function. There are twenty different kinds of amino acids that are essential to life. Twelve of these can be synthesized within the body however; eight must be supplied by the daily diet.

<b>Structure</b>	
<b>Normal Cells</b>	<b>Cancer Cells</b>
DNA in genes and chromosomes go about their business in a normal way.	Cancer cells develop a different DNA or gene structure or acquire abnormal numbers of chromosomes.
Cells divide in an orderly way to produce more cells only when the body needs them.	Cells continue to be created without control or order. If not needed, a mass of tissue is formed which is called a tumor.
<b>Energy</b>	
<b>Normal Cells</b>	<b>Cancer Cells</b>
Cells derive 70% of their energy from a system called the "Krebs Cycle."	Cells have a defective "Krebs Cycle" and derive little or no energy from it.
Cells derive only 20% of their energy from a system called "Glycolysis."	Cancer cells derive almost all their energy from "Glycolysis."
Cells derive most of their energy with the use of oxygen.	Cells derive most of their energy in the absence of oxygen.
<b>Blood Vessels</b>	
<b>Normal Cells</b>	<b>Cancer Cells</b>
Cells have a built-in blood vessel system.	Cells do not have a built-in blood vessel system. They require more of certain amino acids to grow.

<b>Growth Factors</b>	
<b>Normal Cells</b>	<b>Cancer Cells</b>
While similar to cancer cells, the amount of them is more in balance to produce a more normal level of activity.	These cells have over produced, require more chemicals (food) and are over active.
<b>Functions</b>	
<b>Normal Cells</b>	<b>Cancer Cells</b>
The enzymes and hormones go about business in a normal balanced manner.	The enzymes and hormones are either over active or under active.
<b>Tumors are Different</b>	
<b>Benign</b>	<b>Malignant</b>
Benign tumors are not cancerous. They do not invade nearby tissues nor spread to other parts of the body. They can be removed and are not a threat to life.	Malignant tumors are cancerous. They can invade and damage nearby tissues and organs and they can break away and enter the blood stream to form new tumors

	in other parts of the body. The spread of cancer is called metastasis.
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## RISK FACTORS

**Even** though the exact cause of vaginal cancer is not known, researchers have determined that the following factors increase a woman's chance of developing the disease:

**Age.** Squamous carcinoma most often occurs in women between 50 and 70 years old; approximately half of all cases are diagnosed in women over age 60.

**Smoking.** Cigarette smoking places women at increased risk of vaginal cancer.

**DES.** Daughters whose mothers took the drug diethylstilbestrol (DES) during their pregnancy between the late 1940s and 1971 are at increased risk of clear cell adenocarcinoma. The average age of diagnosis is 19 years old. Since most daughters of mothers who took DES are between 30 and 60, the number of cases has declined. However, doctors do not know how long women are at risk of developing DES-caused cancers.

**Cervical cancer.** Women who have had cervical cancer or cervical precancerous conditions are at increased risk of vaginal cancer.

**Radiation therapy.** Women who have had radiation therapy in the vaginal area are at increased risk of vaginal cancer.

**Hysterectomy.** Women who have had a hysterectomy (removal of part or all of the uterus) are at increased risk of vaginal cancer.

**HPV infection.** Women with genital warts caused by the human papilloma virus (HPV) are at increased risk of vaginal cancer. HPV infection is transmitted through sexual intercourse. High-risk sexual behavior that can lead to HPV infection includes intercourse at an early age, multiple sexual partners, sex with a person who has had many partners, and unprotected sex.

## SYMPTOMS

Most vaginal cancers do not cause symptoms in the early stages, but cancer in more advanced stages can cause symptoms to occur. Even precancerous conditions such as vaginal intraepithelial neoplasia (VAIN) may not cause symptoms (asymptomatic). However, many cases of VAIN and early vaginal cancer, although asymptomatic, can be found through regular Pap tests.

The most common symptom of vaginal cancer is abnormal vaginal bleeding. Vaginal bleeding during menopause is not normal and, therefore, always a sign of some problem.

Most women with vaginal cancer report more than one symptom.

Symptoms of vaginal cancer include:

- Unusual vaginal bleeding
- Abnormal vaginal discharge
- Difficulty or pain when urinating
- Pain during sexual intercourse
- Pain in the pelvic area (the lower part of the abdomen between the hip bones)
- Pain in the back or legs
- Swelling in the legs (edema)

These symptoms may be caused by vaginal cancer, or they may be signs of some other, less serious condition. The best way for a woman to determine the cause of these symptoms is to consult a doctor.

**Pessary.** Long-term vaginal irritation in women using a pessary (a device used to keep a sagging uterus in place) increases the risk of vaginal cancer.

## Prevention

Research has shown that certain factors may reduce a woman's risk of vaginal cancer:

- If young, delaying having sexual intercourse
- Avoiding sex with many partners and avoiding sex with someone who has had many partners
- Practicing safe sex
- Having regular Pap tests to detect and treat precancerous conditions
- Not starting to smoke
- Quitting smoking, if a smoker

## DIAGNOSIS

As with all cancers, early detection and treatment is essential for recovery from vaginal cancer. It is important for women to be aware of disease symptoms and see a doctor if any occur. Some vaginal cancers do not present symptoms until the disease has reached an advanced stage.

All women should have an annual gynecologic examination. The doctor will take a family medical history and perform a general physical examination. Other tests may include:

**Pelvic examination.** The doctor feels the uterus, vagina, ovaries, fallopian tubes, bladder, and rectum for any abnormalities.

**Pap test.** The doctor gently scrapes the outside of the cervix and vagina and takes sample cells for testing. During the process, there is some pressure but seldom pain.

**Colposcopy.** The doctor inserts an instrument with binocular magnifying lenses into the vagina and examines the vaginal walls and cervix.

**Biopsy.** If there is anything unusual, the doctor may perform a biopsy. The doctor will use a local anesthetic to numb the area before taking out a small piece of tissue to send to the laboratory. At the laboratory, a pathologist will look at the tissue under a microscope to determine whether the cells are cancerous.

**X-ray.** A chest x-ray can show if the cancer has spread to the lungs.

## TREATMENT

Once vaginal cancer is diagnosed, the patient's health-care team (gynecologic oncologist, surgeon, and radiation oncologist) will recommend a treatment plan. Treatment depends on tumor size and location, disease stage, maintaining vaginal function, and whether the patient plans to have children. Before a woman begins treatment, she may want to consider seeking a second opinion for additional information regarding her treatment options.

Vaginal cancer is most often treated with one or a combination of treatments: surgery, radiation, and/or chemotherapy.

### Surgery

Surgery is the primary treatment for vaginal cancer. Surgery may require repair or replacement of the vagina. Intensive preoperative and postoperative counseling is essential.

Surgical options include:

**Laser surgery.** A narrow beam of light is used to kill very early stage cancer cells. Additional tissue may be removed to be certain that all cancer has been destroyed.

**Wide local excision.** The surgeon takes out the cancer and some of the surrounding tissue. Vaginal repair using skin from other parts of the woman's body may be necessary.

**Vaginectomy.** The surgeon removes the vagina and possibly lymph nodes from the pelvic area.

**Radical hysterectomy.** When cancer has spread outside of the vagina, the surgeon may remove the uterus, ovaries, and fallopian tubes, as well as lymph nodes. If the cancer has spread to other parts of the body, it may be necessary to also remove the lower colon, rectum, or bladder.

If the vagina is removed, a plastic surgeon will create a new vagina with grafts of tissue from other parts of the woman's body. The patient will be able to have sexual intercourse but will need to use a lubrication aid.

If the patient's bladder is removed, a small piece of intestine will be attached to the abdominal wall, allowing her to periodically drain urine by placing a slim, hollow tube into

a surgically created opening. A plastic bag worn at the front of the stomach can be used for continual draining.

If the patient's rectum or part of her colon is removed, the remaining intestine will be attached to the abdominal wall so solid waste can pass through a small opening into a bag worn at the front of the stomach.

## **Radiation therapy**

Radiation therapy uses x-rays or other high-energy particles to kill cancer cells. Treatment is concentrated on a specific area. Radiation may be used alone or after surgery. Often, women may receive both internal and external radiation.

The most common type of radiation is called external-beam radiation, which is radiation given from a machine outside the body. Treatment is usually given five days a week for about six weeks, either in a hospital or clinic.

Some women receive internal radiation. One method is intracavity radiation, in which tiny tubes of a radioactive substance are placed in the vagina for one to two days. The patient must stay in bed during this time. Another method is interstitial radiation, in which needles filled with radioactive material are placed directly into the tumor.

Side effects depend on the treatment dosage, area, and type of radiation (internal or external). Specific side effects may include narrowing of the vagina, damage to healthy vaginal tissue, irritation of the intestines, and diarrhea. The vagina may shorten and narrow so much that intercourse is not possible. To prevent this, a woman can stretch her vagina several times weekly using a plastic tube called a vaginal dilator.

## **Chemotherapy**

Chemotherapy, the use of drugs to kill cancer, is rarely used to treat vaginal cancer. The goal of chemotherapy can be to destroy cancer remaining after surgery, slow the tumor's growth, or reduce symptoms.

Although chemotherapy can be given orally (by mouth), when chemotherapy is used to treat vaginal cancer, most drugs are given intravenously (IV). Intravenous chemotherapy is either injected directly into a vein or through a thin tube called a catheter, a tube temporarily put into a large vein to make injections easier. When treating early-stage vaginal cancer, the drugs may be put directly into the vagina (intravaginal chemotherapy).

Since chemotherapy drugs affect normal cells as well as cancer cells, many people experience side effects from treatment. Side effects depend on the drug used and the dosage amount. Common side effects include nausea and vomiting, loss of appetite, diarrhea, fatigue, low blood count, bleeding or bruising after minor cuts or injuries, numbness and tingling in the hands or feet, headaches, hair loss, and darkening of the skin and fingernails. Side effects usually go away when treatment is complete.

## **Stage 0 Vaginal Cancer**

Treatment may be one of the following:

1. Surgery to remove all or part of the vagina (vaginectomy). This may be followed by skin grafting to repair damage done to the vagina.
2. Internal radiation therapy.
3. Laser surgery.
4. Intravaginal chemotherapy.

### **Stage I Vaginal Cancer**

Treatment of stage I cancer of the vagina depends on whether a patient has squamous cell cancer or adenocarcinoma.

If squamous cancer is found, treatment may be one of the following:

1. Internal radiation therapy with or without external beam radiation therapy.
2. Wide local excision. This may be followed by the rebuilding of the vagina. Radiation therapy following surgery may also be performed in some cases.
3. Surgery to remove the vagina with or without lymph nodes in the pelvic area (vaginectomy and lymph node dissection).

If adenocarcinoma is found, treatment may be one of the following:

1. Surgery to remove the vagina (vaginectomy) and the uterus, ovaries, and fallopian tubes (hysterectomy). The lymph nodes in the pelvis are also removed (lymph node dissection). This may be followed by the rebuilding of the vagina. Radiation therapy following surgery may also be performed in some cases.
2. Internal radiation therapy with or without external beam radiation therapy.
3. In selected patients, wide local excision and removal of some of the lymph nodes in the pelvis followed by internal radiation.

### **Stage II Vaginal Cancer**

Treatment of stage II cancer of the vagina is the same whether a patient has squamous cell cancer or adenocarcinoma.

Treatment may be one of the following:

1. Combined internal and external radiation therapy.
2. Surgery, which may be followed by radiation therapy.

### **Stage III Vaginal Cancer**

Treatment of stage III cancer of the vagina is the same whether a patient has squamous cell cancer or adenocarcinoma.

Treatment may be one of the following:

1. Combined internal and external radiation therapy.

2. Surgery may sometimes be combined with radiation therapy.

### **Stage IVA Vaginal Cancer**

Treatment of stage IVA cancer of the vagina is the same whether a patient has squamous cell cancer or adenocarcinoma.

Treatment may be one of the following:

1. Combined internal and external radiation therapy.

### **Stage IVB Vaginal Cancer**

If stage IVB cancer of the vagina is found, treatment may be radiation to relieve symptoms such as pain, nausea, vomiting, or abnormal bowel function. Chemotherapy may also be performed. A patient may also choose to participate in a clinical trial.

**Source: A.P. John Institute for Cancer Research**

**When considering any type of complementary cancer treatment or alternative cancer treatment, always consult with your physician first, as possible interactions could reduce your treatment protocol's efficacy.**