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Ovarian Cancer

The ovaries are part of a woman's reproductive system. They are in the pelvis. Each ovary is about the size of an almond.

The ovaries make the female hormones—estrogen and progesterone. They also release eggs. An egg travels from an ovary through a fallopian tube to the womb (uterus).

When a woman goes through her "change of life" (menopause), her ovaries stop releasing eggs and make far lower levels of hormones.

Symptoms of Ovarian Cancer

Ovarian cancer is difficult to detect, especially, in the early stages. This is partly due to the fact that these two small, almond shaped organs are deep within the abdominal cavity, one on each side of the uterus. These are some of the potential signs and symptoms of ovarian cancer:

- Unexplained change in bowel and/or bladder habits such as constipation urinary frequency, and/or incontinence
- Gastrointestinal upset such as gas, indigestion, and/or nausea
- Unexplained weight loss or weight gain
- Pelvic and/or abdominal pain or discomfort
- Pelvic and/or abdominal bloating or swelling
- A constant feeling of fullness
- Fatigue
- Abnormal or postmenopausal bleeding
- Pain during intercourse

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Understanding ovarian cancer

Cancer begins in cells, the building blocks that make up tissues. Tissues make up the organs of the body.

Normally, cells grow and divide to form new cells as the body needs them. When cells grow old, they die, and new cells take their place.

Sometimes, this orderly process goes wrong. New cells form when the body does not need them, and old cells do not die when they should.

These extra cells can form a mass of tissue called a growth or tumor.

Tumors can be benign or malignant:

Benign tumors are not cancer:

Benign tumors are rarely life-threatening.

Generally, benign tumors can be removed. They usually do not grow back.

Benign tumors do not invade the tissues around them.

Cells from benign tumors do not spread to other parts of the body.

Malignant tumors are cancer:

Malignant tumors are generally more serious than benign tumors. They may be life-threatening.

Malignant tumors often can be removed. But sometimes they grow back.

Malignant tumors can invade and damage nearby tissues and organs.

Cells from malignant tumors can spread to other parts of the body.

Cancer cells spread by breaking away from the original (primary) tumor and entering the lymphatic system or bloodstream. The cells invade other organs and form new tumors that damage these organs. The spread of cancer is called metastasis.

Benign and malignant cysts

An ovarian cyst may be found on the surface of an ovary or inside it. A cyst contains fluid. Sometimes it contains solid tissue too. Most ovarian cysts are benign (not cancer).

Most ovarian cysts go away with time. Sometimes, a doctor will find a cyst that does not go away or that gets larger. The doctor may order tests to make sure that the cyst is not cancer.

Ovarian cancer

Ovarian cancer can invade, shed, or spread to other organs:

Invade: A malignant ovarian tumor can grow and invade organs next to the ovaries, such as the fallopian tubes and uterus.

Shed: Cancer cells can shed (break off) from the main ovarian tumor.

Shedding into the abdomen may lead to new tumors forming on the

surface of nearby organs and tissues. The doctor may call these seeds or implants.

Spread: Cancer cells can spread through the lymphatic system to lymph nodes in the pelvis, abdomen, and chest. Cancer cells may also spread through the bloodstream to organs such as the liver and lungs.

When cancer spreads from its original place to another part of the body, the new tumor has the same kind of abnormal cells and the same name as the original tumor. For example, if ovarian cancer spreads to the liver, the cancer cells in the liver are actually ovarian cancer cells. The disease is metastatic ovarian cancer, not liver cancer. For that reason, it is treated as ovarian cancer, not liver cancer. Doctors call the new tumor "distant" or metastatic disease.

Ovarian epithelial cancer is a disease in which malignant (cancer) cells form in the tissue covering the ovary.

The ovaries are a pair of organs in the female reproduction system. They are located in the pelvis, one on each side of the uterus (the hollow, pear-shaped organ where a fetus grows). Each ovary is about the size and shape of an almond. The ovaries produce eggs and female hormones (chemicals that control the way certain cells or organs function).

Ovarian epithelial cancer is one type of cancer that affects the ovary. (Refer to the PDQ treatment summaries on Ovarian Germ Cell Tumors and Ovarian Low Malignant Potential Tumors for information about other types of ovarian cancer.)

Women who have a family history of ovarian cancer are at an increased risk of developing ovarian cancer.

Anything that increases your risk of getting a disease is called a risk factor. Women who have one first-degree relative (mother, daughter, or sister) with ovarian cancer are at an increased risk of developing ovarian cancer. This risk is higher in women who have one first-degree relative and one second-degree relative (grandmother or aunt) with ovarian cancer. This risk is even higher in women who have two or more first-degree relatives with ovarian cancer.

Some ovarian cancers are caused by inherited gene mutations (changes). The genes in cells carry the hereditary information that is received from a person's parents. Hereditary ovarian cancer makes up approximately 5% to 10% of all cases of ovarian cancer. Three hereditary patterns have been identified: ovarian cancer alone, ovarian and breast cancers, and ovarian and colon cancers.

Tests that can detect mutated genes have been developed. These genetic tests are sometimes done for members of families with a high risk of cancer. (Refer to the PDQ summaries on Screening for Ovarian Cancer, Prevention of Ovarian Cancer, and Genetics of Breast and Ovarian Cancer for more information.)

Women with an increased risk of ovarian cancer may consider surgery to prevent it.

Some women who have an increased risk of ovarian cancer may choose to have a prophylactic oophorectomy (the removal of healthy ovaries so that cancer cannot grow in them). In high-risk women, this procedure has been shown to greatly decrease the risk of developing ovarian cancer. See the PDQ summary on Prevention of Ovarian Cancer for more information.

Possible signs of ovarian cancer include pain or swelling in the abdomen. Early ovarian cancer may not cause any symptoms. When symptoms do appear, ovarian cancer is often advanced. Symptoms of ovarian cancer may include the following:

Pain or swelling in the abdomen.

Pain in the pelvis.

Gastrointestinal problems, such as gas, bloating, or constipation.

These symptoms may be caused by other conditions and not by ovarian cancer. If the symptoms get worse or do not go away on their own, a doctor should be consulted so that any problem can be diagnosed and treated as early as possible. When found in its early stages, ovarian epithelial cancer can often be cured.

Women with any stage of ovarian cancer should think about taking part in a clinical trial. Information about ongoing clinical trials is available from the NCI Web site.

Tests that examine the ovaries, pelvic area, blood, and ovarian tissue are used to detect (find) and diagnose ovarian cancer.

The following tests and procedures may be used:

Pelvic exam: An exam of the vagina, cervix, uterus, fallopian tubes, ovaries, and rectum. The doctor or nurse inserts one or two lubricated, gloved fingers of one hand into the vagina and the other hand is placed over the lower abdomen to feel the size, shape, and position of the uterus and ovaries. A speculum is also inserted into the vagina and the doctor or nurse looks at the vagina and cervix for signs of disease. A Pap test or Pap smear of the cervix is usually done. The doctor or nurse also inserts a lubricated, gloved finger into the rectum to feel for lumps or abnormal areas.

Ultrasound exam: A procedure in which high-energy sound waves (ultrasound) are bounced off internal tissues or organs and make echoes. The echoes form a picture of body tissues called a sonogram.

CA 125 assay: A test that measures the level of CA 125 in the blood. CA 125 is a substance released by cells into the bloodstream. An increased CA 125 level is sometimes a sign of cancer or other condition.

Barium enema: A series of x-rays of the lower gastrointestinal tract. A liquid that contains barium (a silver-white metallic compound) is put into

the rectum. The barium coats the lower gastrointestinal tract and x-rays are taken. This procedure is also called a lower GI series.

Intravenous pyelogram (IVP): A series of x-rays of the kidneys, ureters, and bladder to find out if cancer has spread to these organs. A contrast dye is injected into a vein. As the contrast dye moves through the kidneys, ureters, and bladder, x-rays are taken to see if there are any blockages.

CT scan (CAT scan): A procedure that makes a series of detailed pictures of areas inside the body, taken from different angles. The pictures are made by a computer linked to an x-ray machine. A dye may be injected into a vein or swallowed to help the organs or tissues show up more clearly. This procedure is also called computed tomography, computerized tomography, or computerized axial tomography.

Biopsy: The removal of cells or tissues so they can be viewed under a microscope by a pathologist to check for signs of cancer. The tissue is removed in a procedure called a laparotomy (a surgical incision made in the wall of the abdomen).

Certain factors affect treatment options and prognosis (chance of recovery).

The prognosis (chance of recovery) and treatment options depend on the following:

The stage of the cancer.

The type and size of the tumor.

The patient's age and general health.

Whether the cancer has just been diagnosed or has recurred (come back).

After ovarian epithelial cancer has been diagnosed, tests are done to find out if cancer cells have spread within the ovaries or to other parts of the body.

The process used to find out if cancer has spread within the ovary or to other parts of the body is called staging. The information gathered from the staging process determines the stage of the disease. It is important to know the stage in order to plan treatment.

An operation called a laparotomy is usually done to find out the stage of the disease. A doctor must cut into the abdomen and carefully look at all the organs to see if they contain cancer. The doctor will also perform a biopsy (cut out small pieces of tissue so they can be looked at under a microscope to see whether they contain cancer). Usually the doctor will remove the cancer and organs that contain cancer during the laparotomy. (See the Treatment Options by Stage section.)

The following stages are used for ovarian epithelial cancer:

Stage I

In stage I, cancer is found in one or both of the ovaries and has not spread. Stage I is divided into stage IA, stage IB, and stage IC.

Stage IA: Cancer is found in a single ovary.

Stage IB: Cancer is found in both ovaries.

Stage IC: Cancer is found in one or both ovaries and one of the following is true:

cancer is found on the outside surface of one or both ovaries; or the capsule (outer covering) of the tumor has ruptured (broken open); or cancer cells are found in the fluid of the peritoneal cavity (the body cavity that contains most of the organs in the abdomen) or in washings of the peritoneum (tissue lining the peritoneal cavity).

Stage II

In stage II, cancer is found in one or both ovaries and has spread into other areas of the pelvis. Stage II is divided into stage IIA, stage IIB, and stage IIC.

Stage IIA: Cancer has spread to the uterus and/or the fallopian tubes (the long slender tubes through which eggs pass from the ovaries to the uterus).

Stage IIB: Cancer has spread to other tissue within the pelvis.

Stage IIC: Cancer has spread to the uterus and/or fallopian tubes and/or other tissue within the pelvis and cancer cells are found in the fluid of the peritoneal cavity (the body cavity that contains most of the organs in the abdomen) or in washings of the peritoneum (tissue lining the peritoneal cavity).

Pea, peanut, walnut, and lime show tumor sizes.

Stage III

In stage III, cancer is found in one or both ovaries and has spread to other parts of the abdomen. Stage III is divided into stage IIIA, stage IIIB, and stage IIIC.

Stage IIIA: The tumor is found only in the pelvis, but cancer cells have spread to the surface of the peritoneum (tissue that lines the abdominal wall and covers most of the organs in the abdomen).

Stage IIIB: Cancer has spread to the peritoneum but is 2 centimeters or smaller in diameter.

Stage IIIC: Cancer has spread to the peritoneum and is larger than 2 centimeters in diameter and/or has spread to lymph nodes in the abdomen.

Cancer that has spread to the surface of the liver is also considered stage III disease.

Stage IV

In stage IV, cancer is found in one or both ovaries and has metastasized (spread) beyond the abdomen to other parts of the body. Cancer is found in the tissues of the liver. After ovarian epithelial cancer has been diagnosed, tests are done to find out if cancer cells have spread within the ovaries or to other parts of the body.

The process used to find out if cancer has spread within the ovary or to other parts of the body is called staging. The information gathered from the staging process determines the stage of the disease. It is important to know the stage in order to plan treatment.

An operation called a laparotomy is usually done to find out the stage of the disease. A doctor must cut into the abdomen and carefully look at all the organs to see if they contain cancer. The doctor will also perform a biopsy (cut out small pieces of tissue so they can be looked at under a microscope to see whether they contain cancer). Usually the doctor will remove the cancer and organs that contain cancer during the laparotomy. (See the Treatment Options by Stage section.)

The following stages are used for ovarian epithelial cancer:

Stage I

In stage I, cancer is found in one or both of the ovaries and has not spread. Stage I is divided into stage IA, stage IB, and stage IC.

Stage IA: Cancer is found in a single ovary.

Stage IB: Cancer is found in both ovaries.

Stage IC: Cancer is found in one or both ovaries and one of the following is true:

cancer is found on the outside surface of one or both ovaries; or the capsule (outer covering) of the tumor has ruptured (broken open); or cancer cells are found in the fluid of the peritoneal cavity (the body cavity that contains most of the organs in the abdomen) or in washings of the peritoneum (tissue lining the peritoneal cavity).

Stage II

In stage II, cancer is found in one or both ovaries and has spread into other areas of the pelvis. Stage II is divided into stage IIA, stage IIB, and stage IIC.

Stage IIA: Cancer has spread to the uterus and/or the fallopian tubes (the long slender tubes through which eggs pass from the ovaries to the uterus).

Stage IIB: Cancer has spread to other tissue within the pelvis.

Stage IIC: Cancer has spread to the uterus and/or fallopian tubes and/or other tissue within the pelvis and cancer cells are found in the fluid of the peritoneal cavity (the body cavity that contains most of the organs in the

abdomen) or in washings of the peritoneum (tissue lining the peritoneal cavity).

Enlarge

Pea, peanut, walnut, and lime show tumor sizes.

Stage III

In stage III, cancer is found in one or both ovaries and has spread to other parts of the abdomen. Stage III is divided into stage IIIA, stage IIIB, and stage IIIC.

Stage IIIA: The tumor is found only in the pelvis, but cancer cells have spread to the surface of the peritoneum (tissue that lines the abdominal wall and covers most of the organs in the abdomen).

Stage IIIB: Cancer has spread to the peritoneum but is 2 centimeters or smaller in diameter.

Stage IIIC: Cancer has spread to the peritoneum and is larger than 2 centimeters in diameter and/or has spread to lymph nodes in the abdomen.

Cancer that has spread to the surface of the liver is also considered stage III disease.

Stage IV

In stage IV, cancer is found in one or both ovaries and has metastasized (spread) beyond the abdomen to other parts of the body. Cancer is found in the tissues of the liver.

Treatment for ovarian cancer

Surgery, chemotherapy and radiotherapy are all used to treat cancer of the ovary. You are most likely to be treated by a team of specialists working together. This will include a surgeon (gynaecologist) and a cancer specialist (oncologist). If you have only seen a surgeon, you should ask to be seen by an oncologist before your treatment plan is finalised. The team will plan your treatment according to

The type of ovarian cancer you have

Whether the cancer has spread (the stage)

What the cells look like under the microscope (the grade)

Your general health

Almost all women with ovarian cancer will need surgery. The amount of surgery you have will depend on the stage and type of cancer you have.

Many women have chemotherapy and some have radiotherapy.

Your doctor may not be able to tell you exactly what stage your cancer is until after your surgery. During the operation, your surgeon will examine the inside of your abdomen. And take biopsies to check whether the cancer has spread.

Stage 1 ovarian cancer

Unless you have a borderline or very low grade cancer you will have surgery to have both your ovaries and your womb removed. This is because it would not be safe to leave the other ovary or your womb behind. There is too great a risk of cancer cells being left behind with them. Your surgeon will also take samples of tissue (biopsies) from areas where the cancer could have spread. You will have biopsies of the Lymph nodes in your pelvis and abdomen

Diaphragm

Tissue lining your abdomen and pelvis

You may also hear your surgeon talk about the 'omentum', or 'omentectomy'. The omentum is a sheet of fatty tissue inside the abdomen. It is usually removed along with the womb as it can be a site of cancer spread. Removing the omentum is called omentectomy.

After surgery you may be offered adjuvant chemotherapy or, more rarely, radiotherapy. This is to help stop the cancer coming back. You are more likely to be offered this adjuvant treatment if you have a Stage 1c cancer or a high grade cancer (one that is moderately or poorly differentiated).

If you have a very early cancer that is borderline or low grade, you may only need to have the affected ovary and its fallopian tube removed. Borderline ovarian cancers are less likely to come back and so your unaffected ovary can be left behind. But if you have had your menopause, or do not want to have any more children, your surgeon may advise that you have both ovaries and your womb removed anyway.

You will probably not be offered chemotherapy or radiotherapy after surgery for a Stage 1 borderline ovarian cancer, as they do not tend to come back.

Stage 2 and Stage 3 ovarian cancer

You will have surgery to remove your

Ovaries

Womb

Omentum

As much of the tumour elsewhere as it is possible to remove

As much of the tumour as possible is removed because the less cancer that is there, the easier it is for chemotherapy to kill off the remaining cancer cells. Your surgeon will try to take out all tumours that are bigger than 1cm across.

During your operation your surgeon may also take biopsies of all the places where spread of the cancer is most likely. This could include biopsies of

Your diaphragm

The lining of your pelvic and abdominal cavities

The lymph nodes in your pelvis and abdomen

After you have recovered from your surgery, you will be given chemotherapy.

Stage 4 ovarian cancer

The treatment you have for Stage 4 ovarian cancer will depend on

How far your cancer has spread

Your general health

How aggressive the cancer is

You may be offered surgery to remove as much of the cancer as possible.

This is sometimes called 'debulking'. After surgery, you can have chemotherapy to try to shrink the remaining tumours. Some doctors try giving chemotherapy first to shrink the cancer so that less surgery is necessary. Or if you cannot have surgery, you can have chemotherapy to shrink the cancer as much as possible. Radiotherapy is sometimes used to relieve symptoms depending on where in the body the cancer has spread.

If you have a very advanced cancer, you may not be well enough for a big operation. Your doctor may tell you that your cancer is an aggressive one and is likely to recur quickly. You may still be able to have chemotherapy to try to shrink the cancer and slow it down. You will need time to think about your options for treatment. And you will need support from your family as well as your doctor in making your decision. There is more about your treatment options in [Treating Advanced Ovarian Cancer](#).

You may find that other women you meet with ovarian cancer are having different treatment from you. This may be because they have a different type of ovarian cancer. Or it may be that their cancer is a different stage. Don't be afraid to ask your doctor or nurse any questions you may have about your treatment.

Suggestion

It often helps to write down a list of questions you want to ask. You could also take a close friend or relative with you when you go to see the doctor - they can help you remember what was said.

Some people feel they would like to get an opinion from a second doctor before they decide about their treatment. If a surgeon (gynaecologist) is treating you, you should get an opinion from a cancer specialist (oncologist) about whether you need chemotherapy or radiotherapy. Most doctors are happy to refer you to another specialist for a second opinion if you would find this helpful.

Note: A second opinion means just that. It does not mean that the second doctor will take over your care. Your treatment will usually still be managed by your original specialist.