

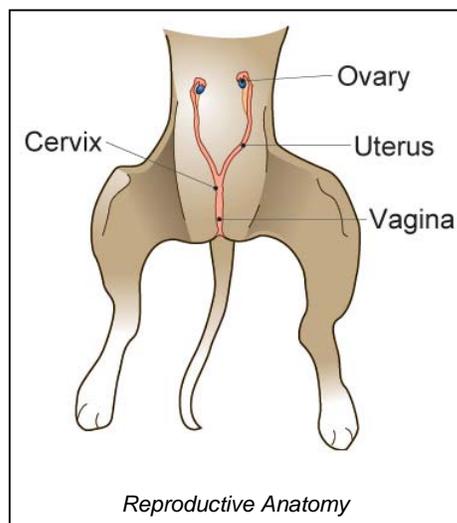
Ovarian Tumors

These notes are provided to help you understand the diagnosis or possible diagnosis of cancer in your pet. For general information on cancer in pets ask for our handout "What is Cancer". Your veterinarian may suggest certain tests to help confirm or eliminate diagnosis, and to help assess treatment options and likely outcomes. Because individual situations and responses vary, and because cancers often behave unpredictably, science can only give us a guide. However, information and understanding for tumors in animals is improving all the time.

We understand that this can be a very worrying time. We apologize for the need to use some technical language. If you have any questions please do not hesitate to ask us.

What are the ovarian tumors?

The ovary contains several different cell types. These include the germ cells, which make the eggs, the supporting (stromal) and hormone-producing cells as well as epithelium, connective tissue and blood vessels.



Any or all of these cell types may become cancerous. When germ cells become cancerous, the tumors are called **dysgerminomas**. Tumors of ovarian stromal cells include **granulosa cell tumors**, **thecomas** and **interstitial cell tumors (luteomas)**. These tumour types overlap and they may occur singly or in any combination. Epithelial tumors include **papillary adenoma** and **adenocarcinomas**. Rare types of ovarian tumour include the **teratoma** formed by embryonic germ (primitive) cells that develop abnormally to produce many different tissues.

Some ovarian cancers are benign and others malignant. In some cases, removal of the affected ovary will be curative. Spread to other internal organs (metastasis) is possible with some types, particularly the larger tumors.

Some tumors are not cancerous but are fluid-filled cavities or cysts. In and around the ovary, cysts are common and arise in a number of different ways, often impossible to differentiate by the time they are noticed.

What do we know about the cause?

The reason why a particular pet may develop this, or any cancer, is not straightforward.

Cancer is often seemingly the culmination of a series of circumstances that come together for the unfortunate individual.

Cancer causes include radiation, chemicals, hormones and infections. At some stages, ovarian tumors need hormones to enable them to grow. It is thought that some surface epithelial tumors can be induced by ovarian granulosa tumors.

Why has my animal developed this cancer?

We do not know precisely why some animals develop these cancers and others do not but abnormal hormone balance is one cause. The more divisions a cell undergoes, the more probable is a mutation so cancer is more common in older animals.

Are these common tumors?

None of these tumors is common. Granulosa cell and epithelial tumors are the most common ovarian tumors in bitches. They are infrequent in the queen cat. Dysgerminomas and teratomas are rare. It is difficult to generalize on occurrence of dysgerminoma because they are rare but they appear to be tumors of advanced age. Stromal tumors such as thecoma are infrequent and interstitial cell tumors (luteomas) are rare.

How will the cancer affect my pet?

Some tumors are found because of the clinical signs due to the excess hormones they are producing. These signs include abnormal seasons, persistent estrus, discharge from the vagina, and masculinization. Granulosa cell and epithelial tumors produce the female hormone oestrogen so they cause enlargement of the uterus, sometimes with secondary infection (pyometra). Some sub-types have the potential to produce male hormones as well. Most interstitial cell tumors are hormonally active. It is not uncommon to find mammary tumors in bitches and queens with ovarian tumors.

Stromal granulosa cell, epithelial tumors and dysgerminomas may become very large so a swollen abdomen is the main sign. Granulosa cell tumors grow up to 6 inches diameter in the bitch.

A few tumors may not be noticed until there is weight loss, illness and lethargy associated with anemia, secondary infection of the uterus or metastatic tumors elsewhere in the body. Pieces break off the shaggy surface of epithelial tumors so these often grow on the inner wall of the abdomen. Lymph or blood-borne fragments grow in internal organs such as the spleen, liver and lungs.

How is this cancer diagnosed?

Clinically, these tumors can be difficult to diagnose because of the great variety of clinical signs they can cause. Increased blood hormone levels are not reliable for diagnosis of these tumors.

Once the tumour is removed, definitive diagnosis of the type of tumour, the stage it has reached and therefore prediction of behavior (prognosis) relies upon microscopic examination of tissue (histopathology). This is done at a specialized laboratory by a veterinary pathologist.

What treatment is available?

The usual treatment is surgical removal of both ovaries and the uterus. Other treatments are not generally available and their effectiveness is unknown.



Can these cancers disappear without treatment?

Cancer rarely disappears without treatment but as development is a multi-step process, it may stop at some stages. Rarely, loss of blood supply will make the cancer degenerate but the dead tissue can cause toxic problems. The body's immune system is not effective in making these tumors stop growing. Theoretically, removal of hormonal stimuli will stop the growth of some tumors but in most cases this can only be achieved by removal of the ovaries with the tumour itself.

How can I nurse my pet?

After surgery, the operation site needs to be kept clean and your pet should not be allowed to interfere with it. Any loss of sutures or significant swelling or bleeding should be reported to your veterinarian. You may be asked to check that your pet passes urine and feces. If you require additional advice on post-surgical care, please ask.

How will I know how the cancer will behave?

Histopathology will give your veterinarian the diagnosis that helps to indicate how it is likely to behave. The veterinary pathologist usually adds a prognosis that describes the probability of local recurrence or metastasis (distant spread).

Dysgerminomas are usually single, large tumors. In the bitch, 10-20% spread locally in the body cavity or metastasize to other organs but this is thought to be in advanced stages. However, it is difficult to generalize on behavior because they are rare. Teratomas are usually benign.

Granulosa cell tumors are usually malignant in cats and sometimes are in dogs. Secondary tumors implant on the inner wall of the abdomen and in internal organs such as the spleen, liver and lungs. Thecomas are probably curable by removal of the ovaries but reliable information is not available. Interstitial cell tumors are reported to be benign.

Epithelial tumors are difficult to differentiate into benign and malignant categories. Large tumors are more likely to be malignant and histopathology may indicate invasion.

How will I know if the cancer is permanently cured?

'Cured' has to be a guarded term in dealing with any cancer.



It is very difficult to promise complete cure once your pet has developed one of these tumors but knowing the type will help this assessment. Although dysgerminomas are usually unilateral, epithelial and stromal tumors may be multicentric and bilateral.

Histopathology may also indicate if there is evidence of malignant cells spreading at the time of surgery. Regrowth of the tumour may be indicated by swelling of the abdomen, hormonal effects or illness of your pet.

Most tumors are age dependent so an older animal has more risk of developing tumors. However, this is not absolute and an ovarian epithelial tumour has been recorded in association with pyometra (pus in the uterus) at one year of age. It is therefore advisable to have your pet checked at intervals.

Are there any risks to my family or other pets?

No, these are not infectious tumors and are not transmitted from pet to pet or from pets to people.