

Canine Soft Tissue Sarcoma

WHAT IS A SOFT TISSUE SARCOMA?

Soft tissue sarcomas are tumors of connective tissues. Different soft tissue sarcomas are grouped together within this larger category because they have similar appearances on biopsy and similar clinical behavior in the patient. Subtypes include fibrosarcoma, hemangiopericytoma, liposarcoma, myxosarcoma, and undifferentiated sarcoma, among others.

WHAT ARE THE CLINICAL SIGNS?

Soft tissue sarcomas typically grow under the skin. They can feel soft or firm and are usually attached to underlying structures. While the tumor may feel well defined, they are highly invasive and send microscopic extensions in all directions. The extent of the tumor is poorly estimated by feel.

Initially, most dogs have no signs related to the tumor. When signs develop, they are usually related to the primary tumor rather than spread. As the tumor grows, it can cause difficulty ambulating and/or cause pain. They may grow quickly, over the course of a few weeks. More commonly they grow slowly over months or years. In advanced cases, the skin overlying the tumor can ulcerate or break open. This leaves dogs susceptible to pain and infection.

WHAT DIAGNOSTICS ARE PERFORMED?

The diagnosis is most accurately achieved with a surgical biopsy. A fine needle aspirate with cytology is less invasive and results are available faster than a biopsy. While the chance of obtaining a definitive diagnosis is less than a biopsy, this is a reasonable first step.

All soft tissue sarcomas have the potential to be locally invasive. This means they grow and invade surrounding structures. The chance for spread (metastasis) depends on the grade of the tumor. Grading is done on a biopsy sample. Regardless of grade, the most common site of spread is the lungs. The tumors can also spread to regional lymph nodes or other organs. Staging tests look for spread of disease. This entails thoracic radiographs (x-rays) and sampling of the local lymph node. An abdominal ultrasound may be recommended to look for internal spread.

Soft tissue sarcomas are treated with surgery. A CT scan is usually required to accurately plan surgery. The CT scan can be extended to include the lungs and abdomen as this more accurately assesses for the presence of metastases.

WHAT ARE THE TREATMENT OPTIONS?

Surgery

This is the treatment of choice for most soft tissue sarcomas. A large margin of healthy tissue must be removed around the visible mass. For tumors in certain regions this may not be possible or may require aggressive surgery such as an amputation to be curative. The risk of regrowth after surgery and metastases depends on the tumor grade. Surgery alone can be curative for low/intermediate grade tumors. The prognosis for high grade soft tissue sarcomas is approximately one year.

Radiation Therapy

Definitive radiation therapy is recommended post-operatively for incompletely excised tumors and pre-operatively for some tumors where removal will not obtain clear margins. This entails daily treatments of radiation for ~ 4 weeks. Each treatment is administered under general anesthesia. A second CT scan may be required after surgery for the purpose of planning the radiation treatment. Radiation therapy is successful in controlling for regrowth in > 75-80% of patients.

Palliative radiation therapy can be done on non-resectable tumors or tumors where the type of surgery necessary to achieve adequate margins is not something an owner wanted to pursue. This usually entails weekly treatments of radiation, but varies. Palliative radiation therapy can stabilize tumor growth for a few months. Palliative radiation can decrease inflammation and reduce pain associated with some tumors.

Stereotactic radiation therapy may be an option for select cases. This may successfully shrink large tumors for a few months and/or stabilize growth.

Chemotherapy

This treatment is reserved for high grade tumors that have the greatest likelihood to spread. It is generally ineffective against treating measurable tumors but is considered in cases where metastases has occurred at the time of diagnosis. Injectable chemotherapy drugs (doxorubicin and ifosfamide) are recommended, though the clinical benefit of these drugs on extending survival is unknown. Metronomic chemotherapy with daily oral cyclophosphamide or chlorambucil and a non-steroidal anti-inflammatory drug is another treatment plan. One small study suggested metronomic treatment delayed the time to tumor regrowth in dogs with incompletely excised soft tissue sarcomas.

Other Therapies

Electrochemotherapy – This form of treatment can be used as an alternative to definitive radiation therapy. Protocols vary, but all patients are anesthetized or heavily sedated before treatment. Chemotherapy is injected into the tumor site and usually also given intravenously. A brief electrical pulse is applied in a systematic manner over the tumor site. Treatments are repeated weekly for an average of 3 sessions.

Tyrosine kinase inhibitor (Palladia®) – This is an oral chemotherapy drug administered at home. Limited data shows that this drug can temporarily stabilize tumor growth, making it an option for non-resectable tumors, tumors that have already spread, or cases where other therapies have not controlled tumor growth.

HOW DO I PREPARE?

We understand this is a difficult time and we are here to support you and your pet by providing the options and care necessary. Selecting a therapy is not binding and can be adjusted to you and your pet's needs. During treatment sessions, you will be provided with updates and any recommendations depending on your pet's response.

WHAT ARE THE SIDE EFFECTS?

Side effects depend on treatment selected, the extent of disease and clinical signs. Surgery carries risk of anesthesia, though this is minimal. Other risks include bleeding and complications from healing or infection. Side effects of chemotherapy are infrequent and most commonly include temporary gastrointestinal upset such as vomiting or diarrhea or temporary lowered white blood cell counts. Decreased appetite and lethargy may also occur. Radiation therapy includes the use of anesthesia during treatments and side effects include gastrointestinal upset (vomiting, diarrhea), local skin/tissue irritation, and potential interference with surgical healing.

Your pet will be prescribed supportive medications for nausea (manifested by decreased appetite, increased salivation, or drooling) and diarrhea for you to have on hand at home to use if necessary. It is best to be proactive with these medications and provide these as soon as signs are noted. Should you have any questions, your oncology team is available to assist and to develop a tailored plan for your pet.

NAVIGATING THROUGH MY OPTIONS:

Treatment	Indication	Treatment schedule	Approximate cost*
Surgery	Localized tumors	Varies according to location and extent of disease	\$3,000 - \$5,000 Additional expenses expected with certain anatomic locations. May require a CT scan
Radiation Therapy: Definitive	Pre-operatively: Large tumors where incomplete resection likely Post-operatively: Incompletely excised tumors	Daily treatments for ~ 4 weeks	\$4,500 - \$6,000 May require CT scan prior to starting treatment
Radiation Therapy: Palliative	Non-resectable tumors	Varies, typically weekly treatments for 4 - 6 weeks	\$1,500 - \$2,500 May require CT scan prior to starting treatment
Radiation Therapy: Stereotactic	Non-resectable tumors	Varies, typically 1-3 consecutive treatments	\$6,000 - \$7,000. CT scan required
Chemotherapy: Doxorubicin/Ifosfamide (alone or altering)	Disseminated disease, post-operatively for high grade tumors	IV treatment every 2 - 3 weeks for 6 treatments	\$400 per treatment
Chemotherapy: Metronomic	Incompletely excised tumors	Daily oral medications at home	Typically \$300 - \$400 per month, varies depending on body weight
Electrochemotherapy	Incompletely excised tumors	Weekly for ~ 3 treatments	\$1,000 - \$1,200 per treatment
Tyrosine kinase inhibitor (Palladia®)	Non-resectable tumors, metastatic tumors, others	Oral medication given every other day at home	Typically ~ \$300 - \$400 per month, varies depending on body weight

GETTING STARTED

Once you have determined the best therapeutic option for your pet, you will work with our oncology team to develop an appointment plan.

Scheduling: Patients undergoing treatments must have a scheduled appointment prior to arrival.

- > Schedule your appointments at reception upon check out.
- > Drop offs are requested between 7:30-8:30 am.
- > Pick ups are requested by 4:30 pm.
- > No discharges are done from 3:30-4:30 pm as our oncology team is in rounds.