

**VETERINARY VOICE:**  
Tips of the Trade

<b>Oncology – Bone Tumors In Dogs</b>	
<b>Definition</b>	Osteosarcoma represents approximately 80% of the primary bone tumor in dogs. Other less common types of primary bone tumors include chondrosarcomas, fibrosarcomas and rarely, tumors from other primary locations can cause secondary metastatic lesions to the bone.
<b>Signalment and Clinical Signs</b>	Osteosarcoma is more commonly seen in older large to giant breed dogs such as Rottweilers, Labs, Golden Retrievers, Greyhounds, German Shepherds, Saint Bernards and Great Danes and can be very painful as it destroys the normal bone in the area. Most dogs present with lameness or a mass/swelling over the metaphyseal region of a bone. The most common locations include the proximal humerus and the distal radius.
<b>Diagnosis</b>	To determine the type of lesion and if it is a cancerous process, we often perform either an ultrasound guided fine needle aspirate or a surgical biopsy. Fine needle aspirates are minimally invasive and can be performed with mild sedation using ultrasound to direct the needle into the bone lesion. Occasionally this type of small sample is non-diagnostic due to the lack of architecture (compared to a larger tissue biopsy sample); and the type of sarcoma (osteosarcoma vs. chondrosarcoma vs. fibrosarcoma) cannot usually be determined. The other option is to perform a surgical biopsy which requires general anesthesia and is done by one of our surgeons. Surgical biopsies obtain a larger tissue sample which is more likely to confirm the type of sarcoma so we can decide on further treatment options. Diagnosis can also be obtained at the time of amputation, although this is only recommended in patients of predisposed breeds with very typically primary bone tumor lesions on radiographs. Recommendations before an amputation include lab work and 3 view chest radiographs to ensure no signs of metastasis before surgery. Abdominal ultrasounds are offered as well in older patients to ensure no other disease processes are present that would alter an owner's decision to proceed to surgery.
<b>Treatment</b>	Since these are painful cancers and will continue to grow and destroy the bone, we recommend amputation of the affected limb for palliation of pain. With osteosarcoma, the average survival time of dogs treated with amputation alone is approx 4-6 months because the cancer cells that have been released from the tumor continue to spread, in most cases to the lungs. With the other less common types of primary bone tumors such as chondrosarcoma or fibrosarcoma, the chance of spread is much lower and amputation is often curative.  The best chance of long term control of osteosarcoma involves adjuvant chemotherapy after amputation is performed (1 treatment every 3 weeks for 6 total treatments). With amputation and adjuvant carboplatin chemotherapy the average survival time for osteosarcoma is 1 year with 20% of dogs alive at 2 years and 10% alive at 3-5 years.  Chemotherapy is generally very well tolerated in pets with very little side effects and maintenance of a good quality of life. Chemotherapy works by attacking the circulating rapidly dividing cancer cells released from the primary tumor to prevent metastasis at other sites.  Other treatment options available include IV pamidronate which is a bisphosphonate used to decrease bone breakdown for patients that will not be able to receive an amputation. Radiation therapy can also be used to palliate pain for 2-4 months but does not offer more long-term control of bone tumors as is seen with a combination of surgery and chemotherapy.
<b>Prognosis</b>	Osteosarcoma has a high metastatic rate with the most common location for spread being the lungs. Prognosis with osteosarcoma is significantly longer when amputation is followed by treatment with IV chemotherapy. Amputation can be curative in low to intermediate grade chondrosarcomas and fibrosarcomas since they have a much lower chance of metastasis.
<b>Questions? Oncology Expert: Anna Szivek, DVM, Diplomate, ACVIM (Oncology)</b>	The Veterinary specialty Center of Tucson has a board-certified oncologist available for questions and consultations during the weekdays. Board-certified oncologists have four additional years of training and are certified by the American College of Veterinary Internal Medicine to assure competency in veterinary oncology.