

ORAL MALIGNANT MELANOMA



What is Oral Malignant Melanoma and how does it behave?

Malignant melanoma (OMM) is the most common malignant oral tumour in dogs. It can arise anywhere in the mouth and the location and extent of the tumour will determine treatment options.

Dogs with OMM often have relatively few symptoms, and most patients present with a mass that is not affecting their quality of life. Many are found at routine dental procedures, sometimes because the mass is causing bad breath. Some patients may have a cough or noise of excitement if the tumour is causing pressure on the throat, or bleeding from the tumour.

Melanoma is an aggressive tumour, which can spread to lymph nodes in the local area and sometimes further to the lungs or other organs. For this reason, we recommend staging for all patients with OMM so that we can formulate a bespoke treatment plan and offer an idea of the prognosis for your pet.

Staging is the process of obtaining bloodwork to check blood count and organ function and imaging such as X-rays or CT scans to look for tumour spread. Sometimes we take samples of any abnormalities found with a small needle, to assess their significance.



What are the treatment options for OMM, is surgery possible?

Surgery can be a very good option for tumours which are small to medium-sized and located further forward in the mouth. Surgery would usually be our first recommendation for those patients, assuming no distant tumour spread is evident at presentation.

Surgical removal of OMM often necessitates removal of the nearby parts of the bone of the mouth (maxillectomy, mandibulectomy) to ensure we take a clear margin of healthy, normal-looking tissue around the tumour. These procedures are well tolerated and cosmetically acceptable in most patients. Sometimes we will recommend the removal of the lymph nodes around the chin and neck at the same time, to maximise our chance of a good outcome by removing as much cancer as possible.

Radiotherapy for OMM

Radiation therapy involves treatment with high-energy x-rays, the aim being to kill the tumour. We use a machine called a linear accelerator. Patients lie on the treatment couch and the machine delivers a focussed beam of x-rays from multiple angles 360° around the patient.

Most commonly we administer radiation to dogs that are not surgical candidates or when surgery has been declined by their owner. This can include OMM affecting the back of the throat, palate and cheek, as frequently appropriate surgical margins are not possible in these locations.

Sometimes we give radiation after surgery, if we know tumour cells are left behind or if we plan this as a combination procedure (for example to reduce the size of a large bleeding tumour).

Melanoma is a tumour that seems to respond just as well to larger radiation doses, also called "fractions", given less frequently than is typical for other tumours. For most other oral cancers we give very small doses every weekday over 3-4 weeks. For OMM however, most commonly we offer treatment with six doses of radiation, delivered once or twice weekly. Sometimes this is reduced to 4 (once weekly) treatments.

Occasionally we advise individual protocols which may be used in certain situations, for example, due to a patient's concurrent medical conditions or temperament.

Your pet's radiation oncologist will always advise you which protocol they think is the best. Most likely you will be given options, depending on your pet, their individual circumstances and your treatment goals.

Each radiation treatment is performed under a short, light general anaesthetic. Prior to the start of treatment, a planning CT scan of the head and neck will be needed to help us prepare a bespoke treatment plan for your pet. This helps us to maximise the radiation dose to the tumour whilst sparing the nearby tissues. This will be required at Southfields even if your pet has had a recent CT scan, as we need patients to be in a very particular and fixed position so that the treatment can be carried out with pinpoint accuracy.

Unfortunately, even with surgery and radiotherapy, we usually cannot cure your pet's tumour. However, radiotherapy can be a very satisfactory treatment for improving quality of life, reducing the risk of side effects and controlling the tumour for a good duration. RT is well tolerated by most patients; particularly with newer technologies to help avoid side effects. Lucky dogs with early melanoma (very small oral tumours without any spread) can experience long-term survival.

Your pet may still be a candidate for RT or other therapies, if they have tumour spread, as this can still improve their quality of life.

Will my pet's tumour-related symptoms improve after RT?

OMM are sensitive to radiotherapy, though the response can be different for each patient. Most will shrink during or after RT.

The full effect of the treatment may be slow and can take months or even years for the tumour to slowly shrink to the smallest size. In some patients, we might only be able to stop it from growing further. In these patients, the benefit may not be as obvious as there will be less improvement in symptoms.

The hope is that as most tumours at least stop growing, any symptoms will not get any worse (whilst the tumour is under control). A high percentage of tumours do shrink with RT, so we hope that the risk of any symptoms relating to the tumour will improve.

Potential side effects related to radiotherapy:

Acute side effects (predictable and temporary)

- + **Hair loss (alopecia) in the treated site:** potentially more likely in non-moulting breeds
- + **Sore skin (radiation dermatitis):** very rarely significant but maybe with larger tumours and in breeds with lots of loose skin around the neck, or thin-skinned dogs like sighthounds
- + **Laryngitis/tracheitis:** inflammation of the throat/airway can cause coughing
- + **Pharyngitis/mucositis:** soreness of the throat inside the lining of the mouth and palate. This may temporarily affect appetite or cause some short-term retching but soft food and pain medications usually prevent this from being concerning. May cause some drooling or stringy saliva
- + **Anaesthesia complications/stress-related problems:** a small number of dogs will develop gastric upsets/diarrhoea from the combination of anaesthesia and travelling/boarding for RT. Rarely patients can inhale food into the lungs during anaesthesia which can cause life-threatening pneumonia
- + **Death:** This is exceptionally rare, but pets can suddenly deteriorate during treatment; e.g. due to anaesthesia complications

In OMM patients, these side effects are usually mild and rarely problematic these days. They are short-term, predictable and self-resolving.

Delayed complications – these are uncommon, and typically arise from 3 months after a course of radiation is completed (usually after 6 months or sometimes years after treatment completion risk <5%)

- + **Leukotrichia:** white hair regrowth in the radiotherapy treatment site is normal but not common in dogs with thyroid tumours

- + **Oro-nasal fistula:** a hole that develops between cavities, due to tumour or bone dying off
- + **Neurologic changes:** brain/spinal cord damage etc are extremely rare with modern radiotherapy
- + **Radiation-induced tumours:** an exceedingly rare complication (typically seen years after initial treatment) and is usually the development of a tumour arising within the treated site

The goal of radiotherapy is to reduce the risk of serious late side effects as much as possible – we aim for <5% overall however in certain individuals the risk may be higher (this will be discussed by your oncologist).

What is the prognosis?

Broadly speaking, around 80-90% of dogs with non-surgical OMM will have a good response to radiation. median survival times (MSTs) with radiation are in the region of 6-12 months. A median survival is similar to an average. It means it is the time at which 50% of patients have died of their tumour, and 50% are still alive. If radiation is used on smaller disease burdens after surgery this is likely to result in a better prognosis than this.

Unfortunately, no guarantees come with any type of cancer therapy. Very rarely, some patients develop cancer spread or local tumour progression very quickly after treatment.

If your oncologist thinks your pet may have a better or worse outcome than the average, then they will discuss this with you.

Chemotherapy and medical management:

There is no good evidence that chemotherapy is beneficial to dogs with OMM although some older studies showed that a subpopulation of dogs will respond to drugs such as carboplatin, so this may be discussed in specific situations.

Immunotherapy

The Oncept melanoma vaccine is an immunotherapy treatment for OMM. This vaccine uses an injection of DNA to elicit an immune response in dogs; specifically, human DNA encoding tyrosinase which is an enzyme involved in the development of the cells (melanocytes) that OMM develops from.

Unfortunately, the vaccine's efficacy has not been robustly tested and so we are cautious in recommending it as a "game-changing" treatment. Some studies have shown longer survival time in

patients having the vaccine and these are better if the patient has good local disease control (the primary tumour has been well treated via surgery/radiation or combination). It is safe however (with very few negative side effects) and easy to administer (once a fortnight for 4 doses in total).

Despite these limitations, there are documented cases of dogs with diffuse metastatic disease or macroscopic tumours disappearing after treatment with Oncept. Therefore, it is possible that on an individual basis, Oncept may prove beneficial to some patients.

A future goal in veterinary oncology is to try and find ways to predict which dogs may be more likely to benefit from this medication.

Electrochemotherapy

An alternative to radiotherapy for local tumour control is electrochemotherapy (ECT), which is when chemotherapy is injected directly into the tumour. This is most suitable for small OMM which do not invade bone. We do not offer this at Southfields but we can refer patients to an appropriate site if ECT is advised.

Palliative Care:

Should you not wish to proceed with any anti-cancer treatment, palliative care should be considered. Palliative care is where we treat the symptoms associated with the tumour without giving any direct anti-cancer treatment. We often recommend anti-inflammatories (NSAIDs), drugs to reduce bleeding and/or painkillers, but the exact treatment will depend on the symptoms that your dog has.

What about cats?:

Melanoma is rare in cats and behaves differently to the disease in dogs, more commonly presenting in the skin or on the nose. However, in rare cases where we see it treatment plans are similar, unfortunately, the prognosis in cats is less good.



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