Use of computed tomography to evaluate nasal diseases in dogs

At the Dick Vet we routinely exam dogs and cats with nasal disorders.

Dogs and cats with suspected intra-nasal disease can present with a wide variety of clinical signs such as nose bleeds (epistaxis), sneezing, nasal swellings, nasal discharge and facial pain. These clinical signs can be caused by a wide range of underlying disease processes such as allergies, foreign bodies, infections and tumours.

At the Dick Vet we have a wide range of diagnostic tools to help us assess patients with suspected intra-nasal disease; the two most useful techniques which we use are computed tomography (CT) imaging and rhinoscopy examination of the nasal cavity.

Computed tomography allows us to obtain cross-sectional images of the body. This feature is extremely helpful when assessing patients with suspected nasal disorders since standard x-rays cannot image all areas of the nose and superimposition of structures makes interpretation of some x-ray views of the nose difficult. Consequently, the routine use of CT in dogs and cats with suspected nasal disease allows the medicine team to gather a tremendous amount of diagnostically useful information.

The following pages show some examples of computed tomography (CT) imaging, each with our interpretation.
A CT image from a dachshund with a left sided nasal discharge.

There is no evidence of abnormalities in this image. The bony structures within the nasal cavity, which are called turbinates, appear normal and there is no asymmetry in the image.

A CT image of a Rottweiler with history of nasal discharge from both nostrils.

Again, the CT images are generally unremarkable although histology of a biopsy of the nasal turbinates revealed an increase in the number of eosinophils, which is often a sign of allergic disease. In this case, the nasal discharge developed shortly after the owner acquired chickens and resolved once the dog was kept away from the chickens!

A CT image of a dog with a nasal tumour.

The normal turbinate structures are lost on the right hand side of the image (arrow) and a soft tissue mass is present. Biopsy of the mass revealed that the mass was a carcinoma.

A post-contrast CT image of a dog with a nasal tumour.

The CT examination revealed that the tumour was occupying almost the entire intra-nasal cavity. The white arrow shows where the tumour has destroyed the bony cavity of the nose which resulted in a swelling on the bridge of the dog’s nose.
A CT image of a dog with nasal aspergillosis which is a fungal infection of the nasal cavity.

The turbinates on the right hand side of the image appear relatively normal but on the left hand side the normal scroll like appearance is lost.

A CT image of a dog with a history of epistaxis (nose bleeds).

The arrows indicates fluid accumulation in the frontal sinus and erosive changes in the skull. These changes are typically seen in nasal aspergillosis.

To examine the appearance of the inside of the nasal cavity, we place a thin camera inside the nose that displays the appearance of the structures within the nose onto a TV screen. This allows us to examine for the presence of foreign bodies, examine whether there is a mass present in the nasal cavity, or whether the normal structures of the nose have been altered by infections.

We routinely then take a biopsy which allows us to gain detailed information on the cells present within the turbinates thereby allowing us to assess whether there is evidence of inflammation, infection or a tumour.
Our linear accelerator

We have a state-of-the-art linear accelerator on site at the Hospital for Small Animals which allows us to deliver radiotherapy treatments. Our colleagues in the oncology service are specialists in the treatment of tumours in dogs and cats and frequently use radiotherapy to treat nasal tumours.