

# SouthPaws

VETERINARY SPECIALISTS & EMERGENCY CENTER



SUMMER 2011  
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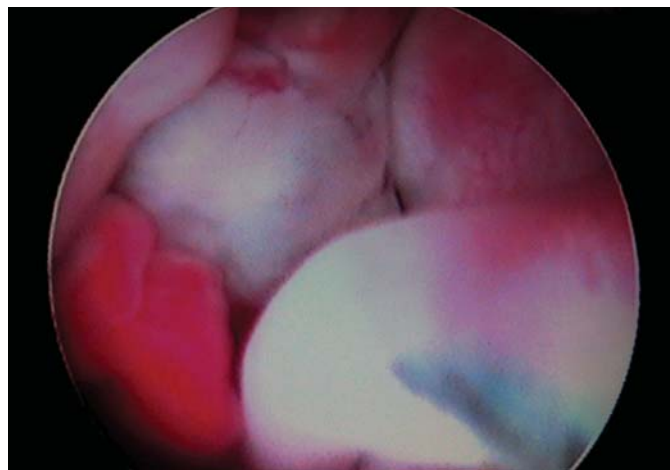
## Diagnostics for Chronic Rhinitis/Sinusitis

DR. JENNIFER GIEG, DACVIM (SMALL ANIMAL INTERNAL MEDICINE),  
SOUTHPAWS INTERNAL MEDICINE

Chronic congestion and nasal discharge is one of the more difficult problems faced by clients and veterinarians alike. We most commonly see chronic rhinitis secondary to tumor, sterile rhinitis (allergic, immune-mediated), and fungal infection, but occasionally identify a chronic foreign body or persistent bacterial infection. Although rarely a medical emergency, the effect on an animal's appetite and quality of life as well as the fear elicited by severe epistaxis can make rhinitis an emergency for owners. In cases where baseline bloodwork, clotting times, blood pressure and dental radiographs don't yield an answer, CT scan and rhinoscopy should be considered both for diagnostic and, in some cases, therapeutic purposes.

CT scan allows us to identify nasal / sinus masses, evaluate the bullae, determine if bony lysis is present, and, in some cases, to identify foreign bodies. It also provides important information about where biopsies should be obtained within the nasal passages and whether the cribriform plate is intact. In cases where radiation therapy for nasal tumors might be considered, we can combine a diagnostic CT with radiation planning to avoid having to perform a second scan prior to treatment.

Rhinoscopy complements CT scanning by allowing us to visualize the nasal passages. We often focus our rhinoscopic exam on the areas that appear most affected on the scan. Rhinoscopy also allows us to see fungal plaques and organic foreign bodies (e.g. plant material) that wouldn't be seen on CT



*Chronic Rhinitis*

*Continued on page 2*

## News and Celebrations at SouthPaws

On March 20, 2011, nearly 300 veterinarians, veterinary technicians and assistants gathered for the 11th biannual SouthPaws CE extravaganza. Thanks to our SouthPaws speakers, Drs. Sheafor, Hoch, Siemering, Nelson, Knoeckel, and O'Keefe along with guest speakers Dr. Wendy Weirich from Hill's and Dr. Meade from the health department for making the event memorable! Special thanks to our sponsors, Hill's, Antech Labs, Pfizer, Merial, MWI, Webster, and Chase for providing the financial support for this large event! Mark your calendars NOW for the next CE Extravaganza – **Sunday, September 18th!** Topics will include orthopedic surgery for hips and knees, homeopathy, soft tissue sarcomas, acute renal failure, chronic renal failure, glaucoma and cataracts!

SouthPaws is pleased to announce the addition of our new criticalist, Dr. Sara Brown, DACVECC. She will join our CritiCare team to enhance and augment our ability to provide your clients the best in emergency care, as well as serving the needs of patients requiring critical care.

*continued page 6*

## Diagnostics for Chronic Rhinitis/Sinusitis... *Continued from page 1*

scan. Because CT and rhinoscopy provide very different types of information, it is rare that we would recommend one without the other.

Primary bacterial infection is almost never implicated in cases of chronic rhinitis, but secondary bacterial infection is a common complicating factor. Particularly in cats, we see resistant *Pseudomonas aeruginosa* infection with some frequency. Unless treated, this will result in failure of therapy aimed at the underlying problem. When secondary infection is suspected, nasal culture may be recommended along with CT and rhinoscopy.

For patients with large amounts of nasal / sinus mucous, a saline nasal flush may be performed following other diagnostics. Red rubber catheters are placed over the soft palate to allow mucous to be flushed out the nose (rather than into the back of the throat). Flushing with large volumes (~ 1 liter of saline in cats and small dogs) and clearing the nasal passages greatly improves a patient's quality of life until treatment can be instituted based on culture and biopsy results. ■

## Vestibular Diseases

DR. ALICIA MONTGOMERY, SOUTHPAWS CRITICARE,  
DR. MIKE KNOECKEL, DACVIM (NEUROLOGY), SOUTHPAWS NEUROLOGY

Vestibular dysfunction—with its tilts, turns, and rolls—is generally not difficult to detect, but identifying the underlying cause can prove to be quite the balancing act! These disorders can be slowly progressive, but may also present with per-acute onset. The key in managing these cases is localizing the source of the disorder and then reviewing the differential diagnosis list for that location.

### Peripheral vestibular diseases (PVDs):

a. Otitis interna is the most common cause of PVD. Underlying allergies, chronic otitis externa, foreign bodies, mites, or inflammatory polyps may play a role and must also be treated. Signs suggestive of otitis would include ipsilateral facial paralysis as well as ipsilateral Horner's Syndrome on the "down side" of the head tilt. Dogs usually have obvious clinical signs of otitis externa, though cats can have significant otitis media/interna without signs of external ear disease. Remember that just because a patient with PVD has otitis does not mean that he/she doesn't also have idiopathic vestibular disease!

b. Hypothyroidism can cause PVD, but is usually accompanied by other clinical signs of this disease.

c. Congenital nystagmus is a spontaneous and constant pendular movement and occurs commonly in Siamese cats as well as Daschunds and Belgian Sheepdogs. Less commonly, a developmental abnormality of vestibular receptors can occur to cause PVD signs in newborns – described in English Cocker Spaniels, German Shepherds, Beagles, Doberman Pinchers, Akitas and Siamese and Burmese cats. These animals generally compensate for their disorder within 3-4 months although head tilt and deafness could be permanent.

d. Neoplastic diseases causing signs of PVD originate from the skin, glands, bones, cartilage, and other tissues associated with the inner ear structures and CN VIII. Cancers causing PVD usually carry a poor prognosis as complete surgical resection may not be possible.

e. Idiopathic vestibular disease is a common disorder seen in older dogs and middle age to older cats. The course of the disease is not affected by medications though the disequilibrium MAY improve with antihistamines such as meclizine. Often the animals are very anxious, and may benefit from sedatives

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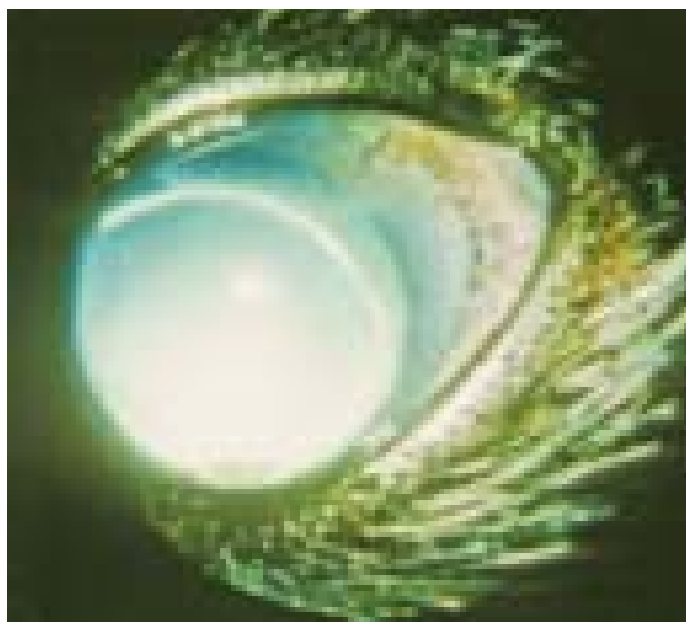
# GLAUCOMA Part I: Presentation, Causes, Susceptible Breeds

DR. NANCY M. BROMBERG, MS, DACVO, SOUTHPAWS OPHTHALMOLOGY

Glaucoma is one of the leading causes of blindness in animals and people. By definition, glaucoma is increased pressure within the eye greater than 25 mmHg, which is incompatible with normal ocular function and vision. It is caused by a disturbance in the flow of fluid within and out of the globe. Primary glaucoma is usually inherited. Secondary glaucoma occurs when there are other problems within the eye which have contributed to the elevated pressure, such as uveitis or luxation of the lens.

Normally, the aqueous humour production by the ciliary body, and outflow of fluid through the iridocorneal drainage angle are at a similar rate thus keeping the intraocular pressure steady. Glaucoma occurs when there is an obstruction to the outflow of the fluid and then pressure within the eye increases.

1. The increased pressure forces fluid forward into the cornea, disrupting the arrangement of the corneal protein fibers, causing them to become edematous, or a cloudy, blue-gray color.
2. The vessels on the sclera (the white of the eye) become enlarged, causing the eye to appear red and inflamed.
3. If the pressure increase is prolonged, the size of the globe will increase because the somewhat elastic fibers in the sclera stretch (buphthalmia).
4. Vision is significantly decreased due to the increased pressure which compromises the optic nerve fibers. The longer the pressure is elevated, the



*Luxated Lens*



*Acute Onset Glaucoma*

- more extensive and permanent vision loss may be. Recent evidence has shown that increased pressure may cause a chain of events to start (cellular apoptosis) which causes nerve fiber death within the retina and optic nerve, even after the pressure is relieved.
5. The lens of the eye is held in place by fibrous strand called zonules. Zonules cannot stretch as pressure increases, so they break leading to lens luxation.
  6. Increased intraocular pressure, and the pathology it causes, may also trigger intraocular inflammation (uveitis).
  7. Acute glaucoma is painful. People who experience acute glaucoma compare the discomfort with migraine headaches. Similarly, animals with glaucoma may express discomfort with signs such as keeping the eye closed, pawing or rubbing the eye, lethargy, hiding in dim places, restlessness, decreased appetite or vomiting. Because dogs are stoic, they may only have decreased activity as a clinical sign.
  8. The pupil may become dilated and unresponsive to light.

The accurate diagnosis of glaucoma is based on a thorough ocular examination and measurement of the intraocular pressure with a TONOMETER. GONIOSCOPY is a diagnostic evaluation of the iridocorneal drainage angle, requiring a special lens, which allows its direct visualization. Gonioscopy may sometimes aid in determining the risk of the development of glaucoma in the normal eye, especially in

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## Glaucoma Part I...Continued from page 3

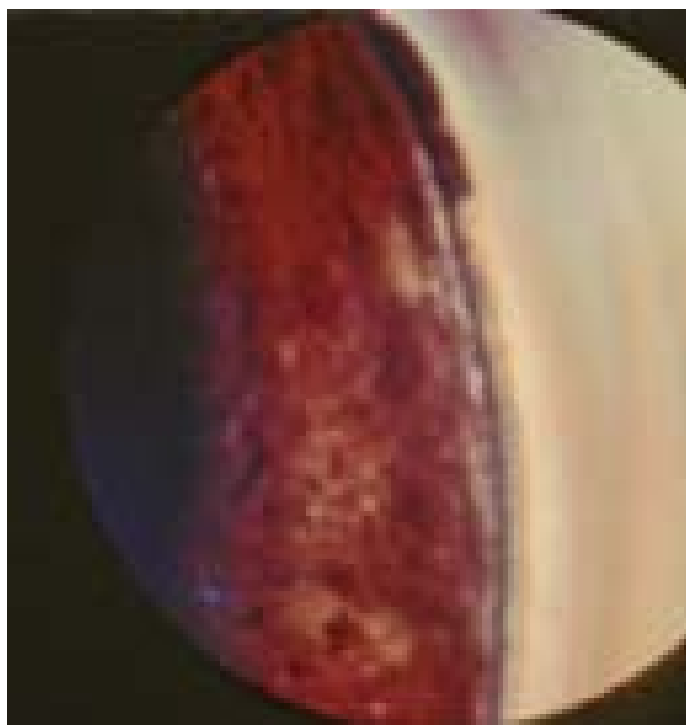
breeds predisposed to the development of glaucoma.

### PRIMARY GLAUCOMA

Primary glaucoma is usually caused by an inherited abnormality of the drainage angle. Breeds particularly susceptible to inherited primary glaucoma include: American Cocker Spaniels, Brittany Spaniels, Basset Hounds, Chow Chows, Chinese Shar Peis, Siberian Huskies, Norwegian Elkhounds, Miniature Poodles, Beagles, and Samoyeds.

### SECONDARY GLAUCOMA

Secondary glaucoma occurs following lens luxation. Several terrier breeds, including the Jack Russell and Wirehaired Fox terrier, and the Chinese Shar Pei have an inherited zonule loss, which leads to a luxation of the lens. If the lens luxates forward through the pupil into the anterior chamber, it disrupts the flow of the aqueous humour, causing a significant, rapid increase in the intraocular pressure. Secondary glaucoma can also be a sequellae to uveitis thanks to blockage of the drainage angle by inflammatory cells, closure of the drainage angle due to the inflammatory process, adhesions (synechiation) of the pupil margin to the lens causing an obstruction of aqueous humour flow (Iris bombe), or to uveitis caused by intraocular neoplasia.



*Closed Iridocorneal Angle*

*Stay tuned for part II – Glaucoma therapy, which will appear in the next SouthPaws Newsletter!*

## Aural Cholesteatoma

DR. JEFF NORTON, SOUTHPAWS SURGERY

Aural Cholesteatoma is an epidermoid cyst that forms within the middle ear. When congenital, it is the result of abnormally positioned squamous epithelium within the middle ear behind the tympanic membrane. Acquired cholesteatomas result from either retraction of the tympanic membrane, or migration of squamous epithelium through a perforation in the membrane leading to cyst formation. Once formed, the cyst will expand. It can do so slowly or rapidly depending on the rate of production of sebaceous material and causes mild to severe inflammation. Infections typically develop and can be very difficult to clear due to poor blood supply to the infected material.

Cholesteatomas are typically reported in dogs as a complication of chronic otitis media/externa. In one study of dogs with disease of the middle ear, cholesteatoma was identified histologically in 7 of 42 dogs (1). In a recent, published case series of 20 dogs, the most typical clinical signs seen associated with cholesteatoma are head tilt, unilateral facial palsy, ataxia, nystagmus, circling, and unilateral atrophy of the temporalis and masseter muscles. Four dogs had pain on opening the mouth or could not

fully open the mouth. One dog had increased respiratory noise and inappropriate respiratory effort. Concurrent diseases included allergic skin disease, hypothyroidism, *Ehrlichia canis* infection, obesity, degenerative joint disease, and lick granuloma (2). The vast majority of cases had positive aural aerobic cultures, as well.

Diagnosis and best planning of surgical therapy requires advanced imaging, either CT or MRI. Typical findings include middle ear disease, either uni- or bilateral, osteoproliferation, lysis of the bulla, expansion of the bulla, bone lysis within the squamous or petrosal portions of the temporal bone, and enlargement of associated lymph nodes (2). These changes can often be confused for an aggressive neoplasm, but most aural cancers involve a tumor that originates in the external ear canal and then could extend into the middle ear. Again, CT or MR is invaluable in differentiating these conditions.

Curative treatment is removal of the cholesteatoma by removing all keratin debris and stratified squamous

*Continued on page 5*

# The Use of Holistic Medicine in ENT Cases

DR. JORDAN KOCEN, CVA AND DR. MARILYN KHOURY, CVA SOUTHPAWS HOLISTIC MEDICINE

Holistic Medicine provides a treatment option for many conditions in the “ENT” category. The underlying method of action of most alternative/holistic therapies is to enhance the body’s ability to perform its normal functions. Many disease processes occur because of a deficient immune system, which may manifest quantitatively and qualitatively. While each of these therapies has the potential to help most conditions, they each have specific conditions where they are more likely to work.

Acupuncture exerts a strong influence on the nervous system, local blood supply and muscle tension. Homeopathy is most effective in conditions manifesting as acute or chronic inflammation. Chinese Herbal Medicine is helpful where there is hypofunction, and to help adjust normal functions. Veterinary Low Level Laser Therapy shows promise in cases of unregulated and tissue specific immune dysfunction.

We have had very good results using acupuncture in cases of vestibular disease in dogs and cats. Local points at the base of the skull and points that correspond to liver function are especially effective. Chinese medical theory places normal (and therefore, abnormal) motion in the Wood category. Physically this includes the liver and gall bladder and so liver support points are helpful here. Many cases of vestibular disease will resolve on their own, but acupuncture has consistently shortened the time to recovery and resulted in fuller resolution of symptoms.

Otitis externa has responded to Chinese Herbal and Homeopathic therapies. Since this problem is a local manifestation of a larger immune-mediated process, local treatment alone is usually not too rewarding. Atopy is an inappropriate immune response so treatment aims to “balance” the immune system. We speak of tonifying or strengthening

immune function with these therapies. In these cases, we are improving the qualitative rather than quantitative amount of immune capacity. The result is to help the body respond more appropriately to its local environment.

Chronic sinusitis is a frustrating condition in cats. Many do not respond to conventional treatment with antibiotics or steroids. Homeopathic remedies have a good chance of helping in these cases. Plus, this form of therapy is most amenable to feline administration. All Homeopathic remedies are made as liquids involving a dilution technique of the original substance: plant, mineral, salt, etc. These liquids are then poured onto small sugar pills for oral administration in people. For cats we usually re-suspend the pellets in water and can then dose by delivering a small amount anywhere in the cat’s mouth, often dosing twice weekly (or sometimes even less often).

Laryngeal Paralysis has showed some response to acupuncture and Chinese Herbal therapies. We have not been able to resolve the condition but many patients have showed some improvement and treatment has slowed the progression of the symptoms. Acupuncture helps partially because it helps mobility in these older arthritic dogs. Less effort results in less exertion and lower need for airflow in the larynx. Chinese Herbal medicines can help decrease inflammation and ease breathing, as well.

Integrating holistic therapies with conventional medicine into a treatment protocol will often provide the best results. Homeopathic remedies, however, may have their activity dampened or inactivated by concurrent glucocorticoid therapy, because their method of action is to stimulate a specific inflammatory response. Acupuncture and Chinese Herbs usually integrate without problems. ■



## Aural Cholesteatoma...Continued from page 4

epithelium—a difficult task due to the size and location of the affected tissue. Early diagnosis and intervention is essential to success. Surgical recommendations are typically either a TotalEarCanalAblation+LateralBullaOsteotomy, or a TECA+ventral bulla osteotomy. The type of approach and surgery is dictated by the extent of disease seen on CT/MRI imaging. As surgical removal is understandably more difficult if the disease has become advanced, early CT imaging of dogs with continuing

signs of otitis may allow earlier intervention and treatment, with resultant better cure rates. Recurrence after surgery is common when advanced disease is present, indicated by inability to open the jaw, neurologic disease, or bone lysis on CT imaging. Appropriate antibiotic therapy is essential and can result in resolution of clinical signs for prolonged periods even when all abnormal epithelium cannot be removed. ■

## Ears, Nose, and Throat Cancers—Oh My!

DR. MONIKA JANKOWSKI, DACVIM (ONCOLOGY), SOUTHPAWS ONCOLOGY

Any disease process or tumor involving facial features always presents a unique challenge. Most of the time we are presented with a mass in a limited space/volume. The age old question always comes about: How fast are the cells dividing and can I get any degree of normal margins with a surgery? For the most part, we still incorporate the main treatment modalities of surgery, radiation therapy, and chemotherapy for head and neck tumors. However, there are some variations of these themes with some certain tumor types to consider.

Nasal carcinomas and sarcomas are either treated medically for quality of life issues (this includes anti-inflammatory agents, pain medications, +/- antibiotics as needed) or with radiation therapy. Traditionally, full course radiation is given from 16 to 19 daily treatments of 2.5-4Gy. Survival times range from 12-15 months on average. Another approach to treatment is to consider a palliative radiation treatment scheme-otherwise known as coarse fractionation. A radiation treatment is given once per week at 8 Gy per fractions for 4 total treatments. This variety of therapy can provide relief from nasal signs with significantly fewer local side effects. The expected outcome for survival is 4-6 months. The use of chemotherapy as a radiation sensitizer in conjunction with radiation has also been reported. Gemcitabine, in the class of antimetabolites, is given IV over 30 minutes just prior to administration of radiation therapy to make the cancer cells more responsive to radiation.

Tonsillar squamous cell carcinoma is a locally

aggressive tumor with a high likelihood of metastasis (90%). Surgery can sometimes be performed (tonsillectomy), however chemotherapy is needed to try to control local and systemic spread.

Intralesional carboplatin or bleomycin, mixed with sesame seed oil to make a viscous solution intended to remain in the intended area for a longer time period could be injected intraoperatively or postoperatively into the tonsillar crypt area to try to prevent local recurrence. Intravenous chemotherapy with carboplatin or mitoxantrone has also been advocated to slow systemic spread. Regional palliative radiation therapy can be helpful in controlling local disease in over 75% of cases if surgery is not an option. Piroxicam or meloxicam are used in these patients not just to improve comfort but also as direct anticancer agents which can be used in conjunction with many of these other modalities for tonsillar TCC. Most patients enjoy the best quality of life for the longest duration when treated with multimodality therapy.

Ceruminous gland adenocarcinomas are the most common malignant tumor in the ear canal. They are considered locally invasive; however, approximately 10% of cases spread to the lymph nodes. In dogs, total ear canal ablation with lateral bulla osteotomy can result in median survival times of 36 months. In cats, a median survival time of 42 months can be attained with the same aggressive surgery as dogs. Again, if, even with a TECA, margins cannot be clear, radiation therapy can be used after surgery. Chemotherapy is added post-operatively only for the uncommon high grade ear carcinomas. ■



# Radiographic Diagnosis—CT Imaging of Max's Skull Mass

DR. ROBERT TOAL, MS, DACVR, SOUTHPAWS DIAGNOSTIC IMAGING CENTER

Max, a 12 year old male neutered Dachshund, presented with a slowly growing mass located over the right eye. Should an incisional biopsy be performed first, or should an attempt at excisional biopsy be made? The first step was to contact Southpaws Diagnostic Imaging Center to discuss imaging options that would best show if the lesion was resectable.

Imaging modalities useful for characterizing this type of skull lesion include MRI, CT, or multiple x-ray views of the skull using general anesthesia. Since the goal was to determine as precisely as possible the origin of the mass and its potential for resectability with adequate margins, a cross sectional imaging technique was chosen over standard x-rays. Cross sectional imaging allows better anatomic visualization and better detail, especially in skull studies where complex anatomy and superimposition of structures hinders evaluation on standard x-rays. The choice between CT and MRI for non-neurological disease is often a matter of preference or availability. Both modalities show bone and soft tissues but it is often said that MR is superior for soft tissue imaging while CT is superior for bone imaging. There are exceptions to this rule. In this case, the patient had a hard skull mass over the right eye in the frontal sinus region. If a bony growth occurs over the calvarium (brain case) with potential extension into the brain, then MR is what I choose because subtle brain lesions and the integrity of the vessels show better on MR than CT. For nasal disease, both modalities have their strengths and weaknesses. Since Max's lesion was not over the brain and no clinical evidence of ocular extension was evident, a CT was suggested as the best option.

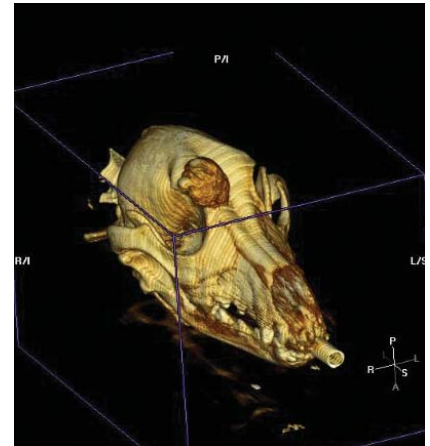
Differential diagnostics for a hard skull mass such as this included trauma-induced proliferation (sinus mucocele), or neoplasia such as osteoma, osteosarcoma, or multilobular osteochondroma (MLO). As the success of excision (wide clean margins) is the most important prognostic factor for any of these differential diagnoses, a CT was performed first (rather than an incisional biopsy). Both pre and post contrast CT images of the skull were made under general anesthesia from the tip of the nose thru the occipital region. Axial Images were acquired at 3mm slice thickness with a 1mm gap between each slice. Images were reconstructed in axial plane as well as 3 dimensional representation using proprietary software for this purpose (Helix: Sound- Eklin).

The CT images showed a well-margined, non-homogeneous bony mass with a coarse granular to finely stippled appearance. It was smoothly margined and lysis of adjacent bone was not seen. It was a surface-origin mass with no invasion into the sinus

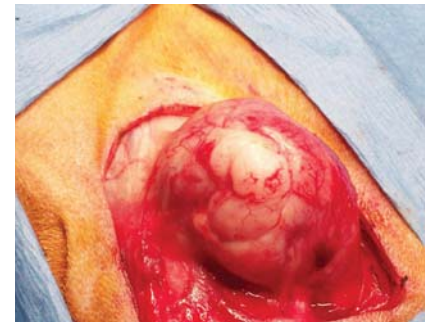
or contiguous structures. The mass measured 2.4cm wide, 2.6cm tall and 6cm cranial to caudal. It was situated over the frontal sinus and caudal nasal cavity allowing for surgical resection with "restricted margins". No cranio-facial lymphadenopathy was noted. The CT pattern was consistent with an MLO; lesser consideration was given to an osteoma or possibly an osteosarcoma in its early phases (non-infiltrating). An example of the 3-D reconstruct images is shown in figure 1.

Max had surgery and the mass was removed. Biopsy confirmed Multilobular Osteochondrosarcoma (MLO). These tumors occur in flat bones of the skull and most often involve the occipital bone, frontal bone and zygomatic arch. Clinical signs depend on the location of the tumor and degree of local invasion. MLO histologically is composed of dense lobules of cartilage, bone, or lobules of cartilage undergoing intramembranous ossification. They are classified as a low grade malignant neoplasm. The success of en-bloc resection is the most important prognostic factor in these patients, although a low percentage could develop distant metastatic disease. For patients who have non-resectable tumors, other therapeutic options include injectable radio-isotope therapy, palliative radiation therapy, and a number of different growth inhibitor therapeutic options. ■

*Special thanks to Dr. Neal Neuman of St. Charles Animal Hospital.*



*3-D reconstruct of the skull CT showing the large bony mass*



*Gross surgical photo of the mass*



## Vestibular Diseases...Continued from page 2

such as diazepam.

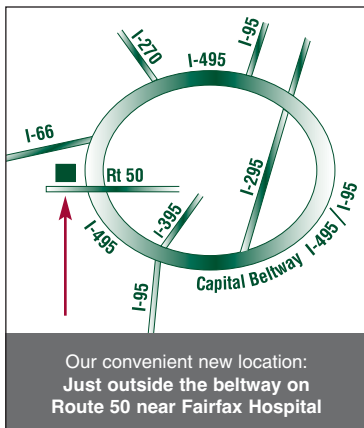
As an idiopathic disease, the underlying cause is unknown, though disorders in endolymph flow and immune-mediate neuritis have been speculated. This disease can be difficult to differentiate from other causes of vestibular disease such as otitis interna, brainstem or cerebellar disease. Clients frequently think their pets have had a seizure or a stroke. Idiopathic vestibular disease is a diagnosis of exclusion in many patients, but carries a good prognosis. An animal with only Idiopathic Vestibular Syndrome will always have intact proprioception. Central vestibular disease (CVD), not idiopathic vestibular disease should be suspected if the animal knuckles, especially on a thoracic limb (likely brainstem disease), or has vertical nystagmus or nystagmus that changes direction or character in different head orientations (such as dorsal recumbancy). CVD is also likely if other cranial nerve deficits (blindness, loss of PLR, decreased gag response, etc.) are found. As vestibular animals are often very anxious, change of mentation may be difficult to appreciate, but obtundation or dementia are indications of CVD, ruling out idiopathic vestibular disease.

In the absence of these CVD signs, we can feel more comfortable with our diagnosis and advise the owners they should expect to see the nystagmus and nausea improving in a few days and the disequilibrium resolving over 1 to 2 weeks. Usually the head tilt improves as well, but occasionally it may last much longer and even be permanent. In blind animals, due to absent visual input to help the brain compensate, recovery will be slower but should occur over a few more weeks.

### Central vestibular diseases (CVDs):

a. Many causes of CVD can be more difficult to treat and carry a more guarded to poor prognosis than PVD. Some differential diagnoses for CVD include Granulomatous meningoencephalitis, meningiomas and choroid plexus tumors (in dogs), meningiomas and lymphoma in cats, infectious diseases such as Canine Distemper, FIP, Rocky Mountain spotted fever, anaplasmosis, ehrlichiosis, fungal diseases, protozoal infections, or rarely bacterial infections. For patients with infectious CVD, multifocal neurological localization is expected, not just CVD.

b. Toxic and metabolic causes for CVD, on the other hand, can carry a good prognosis with treatment. Acute CVD signs can be seen in dogs receiving high doses of metronidazole (>66mg/kg/day), especially if they are receiving chronic therapy. Signs will resolve over 1-2 weeks with discontinuing the medication; faster resolution is achieved if treated with diazepam 0.5mg/kg TID x3days. Thiamine (B1) deficiency can also cause CVD signs (more often in cats than dogs). ■



### DIRECTIONS TO FACILITY

From the north and south directions on the Beltway take exit 50A US 50 West. Go to the second light, Javier Rd., and make a right. Make an immediate left onto Arlington Blvd. Frontage Rd., in front of the BB&T bank. Look for the paw print on the building.

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