SURGERY:
Biopsies: You Have To Get The Answer!

We have all encountered that unexpected mass in the mouth during a dental prophylaxis. Sometimes the answer may seem obvious, but never make an assumption without biopsy confirmation. Additionally, histopathology provides insight into what will be needed for successful treatment.

Fig. 2 *Photographs showing ventral (A) and intraoral (B) views of a large mandibular mass in a Rottweiler.*

Fig. 1 *Photograph of a Golden retriever with mandibular deformity (A) secondary to an oral neoplasm. Intraoral radiographs show an extensive osteolytic/osteoproductive disease process (B and C). The mass had been biopsied 1-year earlier and the diagnosis was fibroplasia and reactive bone. The second biopsy showed bilateral osteosarcoma.*

The first step in determining appropriate treatment is biopsy. *Nothing is more frustrating to a veterinarian or their client when a biopsy is performed and a diagnosis is not obtained.* Sometimes this happens no matter how good the biopsy sample is, but taking steps to ensure you have adequate tissue for the pathologist can greatly reduce the instance of non-diagnosis. *You must be aggressive in taking your sample.* Oral tumors often invade bone and have a significant inflammatory component (Fig. 1). Thus, it is important to get a deep biopsy through the soft tissue and into the underlying bone to get the answer (Figs. 2-3). *Another service we often provide is excisional biopsy, which can provide a therapeutic result while achieving a diagnosis at the same time* (Fig. 4). Masses are evaluated with radiographs and thorough oral examination under anesthesia to determine if excisional biopsy is appropriate. Incisional biopsy is always offered especially for larger tumors or tumors that appear malignant. Even tumors that appear to not be resectable should be biopsied to determine the tumor type (Fig. 5). Some tumors can be reduced in size with chemotherapy or radiation and then treated with surgical resection. In other cases, debulking the tumor may make chemotherapy or radiation more effective. Finally, for some non-surgical cases, it just gives the owner peace of mind to know what type of tumor their pet has allowing all options to be considered. *If you are not comfortable or sure what area to biopsy, we are available to help.*

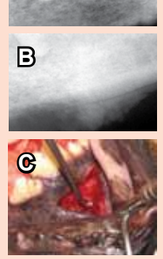

Fig. 3 *The mass in the Rottweiler was primarily osteolytic (A and B). An aggressive biopsy (C) ventral to the first molar tooth yielded a result of squamous cell carcinoma.*

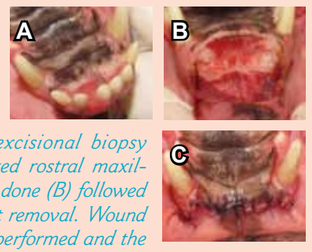

Fig. 4 *Photograph of an oral mass that was a candidate for excisional biopsy (A). A limited rostral maxillectomy was done (B) followed by tooth root removal. Wound closure was performed and the maxillectomy healed without complication (C). The diagnosis was an acanthomatous epulis. The procedure provided a diagnosis and cure in one procedure.*

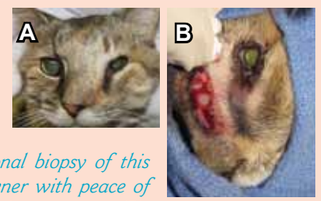

Fig. 5 *Patient with a large tumor causing distortion of the face. A tumor of this size and location would not be surgically resectable (A). Incisional biopsy of this mass provided the owner with peace of mind and an idea of what to expect (B).*

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Dr. Mark M. Smith and Dr. Kendall Taney are partners in the Center for Veterinary Dentistry and Oral Surgery established in 2006. Dr. Smith is a Diplomate of the American College of Veterinary Surgeons and the American Veterinary Dental College. He was Professor of Surgery and Dentistry at the VA-MD Regional College of Veterinary Medicine at Virginia Tech for 16-years before entering private practice in 2004. Dr. Smith is Editor of the Journal of Veterinary Dentistry and co-author of Atlas of Approaches for General Surgery of the Dog and Cat.

Dr. Taney is a Diplomate of the American Veterinary Dental College and a Fellow of the Academy of Veterinary Dentistry. She has practiced dentistry and oral surgery at the Center since 2006. She is a 2002 graduate of the VA-MD Regional College of Veterinary Medicine. She completed her residency at the Center and has also performed internships in both general medicine and surgery, and specialized surgery.

Dr. Emily Edstrom is a 2010 graduate of the Colorado State University School of Veterinary Medicine. She completed a rotating internship in small animal medicine and surgery at VCA Veterinary Referral Associates in Gaithersburg, MD. She is a member of the American Veterinary Dental Society.

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SURGERY:
A Head Mass Too Big!

One never knows what exactly prompts an owner to take action after a veterinarian's recommendation. Sometimes there is a financial concern. Other times the owner does not perceive the problem to be so urgent. Some owners claim that the veterinarian said not too worry about it. *No matter the communication history, it is clear that multiple factors are involved to determine when a client seeks specialty care.*

Fig. 1 *Preoperative (A and B) views of a head mass in a 12-year-old Labrador retriever.*

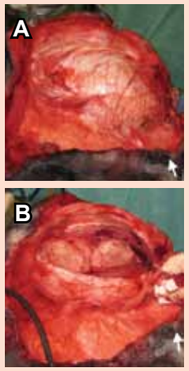

Fig. 2 *Intraoperative views following flap elevation and frontalis muscle exposure (A). Incision through the frontalis muscle and fascia exposes the lipomyxoma.*

The dog reported here had a 4-year history of an enlarging head mass (Fig. 1). The dog had no other clinical signs and was behaving in a normal manner. A fine needle aspirate had been performed by the referring veterinarian and was non-diagnostic. The fact that the tumor had been present for 4-years without causing negative clinical signs indicated that the lesion was likely benign. *A second 18 g core needle biopsy/aspirate provided a differential diagnosis of lipoma, liposarcoma, myxoma, or myxosarcoma.* Although in the owners' opinion the dog was fine and acted normally, they elected to have surgery because they were "tired of people asking them what was wrong with their dog"!

A wide surgical margin is required for all neoplasms in hope of removing the entire lesion. In this case, wide surgical margins would have potentially compromised left ear and eye function. *The decision was made to perform a more conservative surgery and remove the lesion with no margin assuming a successful outcome if benign.*

A semi-lunar skin incision based on midline provided access to the mass after subcutaneous tissue and frontalis muscle dissection (Fig. 2). Fortunately, the mass could be removed after digital dissection along the left base of the skull. The left ear was not involved. The location of the tumor required placement of a closed suction drainage system to minimize seroma formation (Fig. 3). The histopathologic diagnosis was lipomyxoma that was associated with a good prognosis. The wound healed without complication and the owners did not have to answer any more questions from curious people (Fig. 4)!

Fig. 3 *The lipomyxoma was over 12 cm in diameter (A). The frontalis muscle fascia was apposed (B) before placement of the closed suction drain system (C).*

Fig. 4 *The skin was apposed using a combination of simple interrupted and Ford interlocking skin sutures (A and B). One-month postoperative photograph shows expected healing and excellent cosmesis (C).*

SURGERY:
Maxillfacial Trauma Management.

The warmer weather is finally approaching, and that means an increase in vehicular trauma and the myriad of injuries that can occur. Maxillofacial trauma is common in these cases and will need to be addressed once the patient is stabilized (Fig. 1). Serial neurologic examinations should be performed to assess the patient's mentation and neurologic function prior to treatment of non-life threatening injuries. Fractures of the teeth and jaws can affect the patient's ability to eat in addition to being painful. Recovery from extensive trauma will be expedited by the patient's ability to aliment and receive adequate nutrition. We can perform a variety of stabilization techniques to repair jaw fractures that will allow the patient to eat immediately (Fig. 2). Placement of a feeding tube provides an insurance policy for patients that are still painful or unwilling to eat (Fig. 3). Non-invasive techniques for jaw fracture repair are preferred due to the high number of structures that can be damaged with internal fixation. Tooth roots and blood vessels are intimately associated with the maxilla and mandible, and are almost unavoidable. Internal fixation can damage these structures and cause long term-problems. Our biggest priority when repairing fractures is to achieve normal occlusion (Fig. 4). Fixation techniques and procedures that allow for healing with normal occlusion will also avoid long term morbidity for the patient. Non-invasive appliances are developed specifically for each individual patient based on their injuries (Figs 5 and 6). A creative mind is sometimes needed to achieve the desired outcome! Appliances are checked bi-weekly and generally removed in 4-8 weeks.

Fig. 1 *This patient had multiple maxillofacial injuries and ocular trauma. Once the patient was determined to be stable and neurologically appropriate, repair of the injuries was performed.*

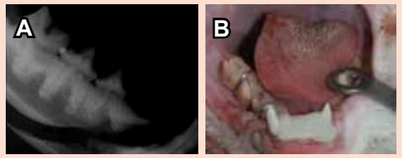

Fig. 2 *Mandibular fracture in a cat (A). The mandibular symphysis was also separated so the repair technique was adapted to address both injuries. Reduction and stabilization of both mandibular fractures was performed using a wire and acrylic appliance.*

Fig. 3 *This patient had fractures of the temporomandibular joint which required immobilization of the joint to allow healing. A feeding tube (arrow) is placed in these cases since they may not be able to eat on their own immediately.*

Fig. 4 *It is essential to achieve normal occlusion during fracture repair in order to prevent long-term morbidity in oral trauma patients.*

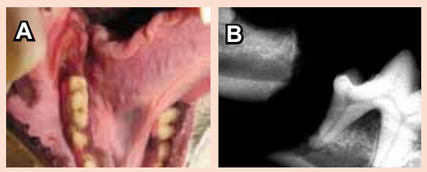

Fig. 5 *Oral (A) and radiographic (B) views of a caudal mandibular fracure in a dog.*

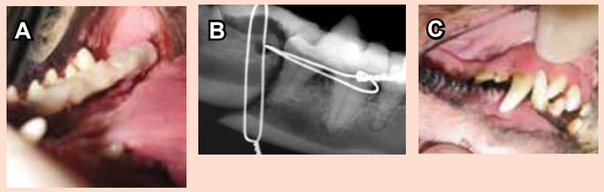

Fig. 6 *Interdental and interfragmentary wires aided application of an acrylic splint (A and B) that restored occlusion (C).*

SURGERY:
Never Give Up, Because You Never Know!

We have all had cases where we make an assumption about what tumor type is present. Once you make that assessment, right or wrong, it affects your judgment and how you communicate with the client. When you think it is a malignant tumor, you paint a relatively bleak picture that influences the client's decision making. And, all this may take place before a biopsy is even taken! *Just when you think you can "guess" what the tumor is, you'll get burned!* We have all seen squamous cell carcinoma (SCC) in cats. SCC affects epithelial tissue and is the most common neoplasm of the mouth. It is also commonly diagnosed in the eye, ear, nose, and digit.

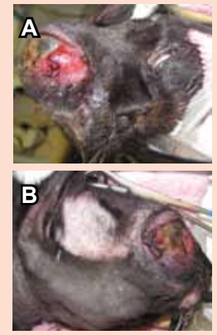

Fig. 1 *Facial (A) and lateral (B) views of a 11-year-old cat with with an orbital mass.*

This 11-year-old cat was presented for a retrobulbar ocular mass (Fig. 1). The mass was so large that the globe protruded causing corneal desiccation despite diligent eye lubricant application. It was not possible to salvage the eye and it was unlikely that the entire neoplasm could be resected. Based on the differential diagnosis of SCC or adenocarcinoma, was it appropriate to even operate this patient? *Would you, as a veterinarian, recommended further treatment….even biopsy, since the prognosis seemed grave, regardless of specific tumor type.*

The owner agreed to orbital exenteration and excisional biopsy in order to relieve the cat's discomfort, diagnose the type of neoplasm, and determine if there might be an effective adjunct therapy for the lesion.

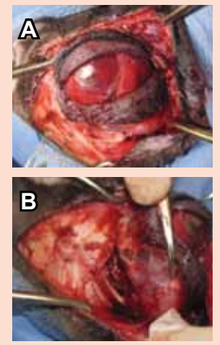

Fig. 2 *A CO2 laser was used for incising skin from the location of the parotid lymph node and proceeding circumferentially around the globe including the eyelids and all adnexal structures (A). The zygoma (hemostat pointing) was partially resected to provide access to the retrobulbar mass (B).*

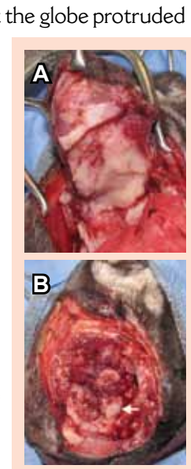

Fig. 3 *The mass was resected (A) however it was not possible to remove the entire mass (B).*

The orbital exenteration was begun by making an incision from the location of the parotid lymph node and proceeding circumferentially around the globe including the eyelids and all adnexal structures. The zygoma was partially resected to provide access to the retrobulbar mass (Fig. 2). Unfortunately, the neoplasm tracked along the optic nerve and was not completely resectable (Fig. 3). The wound was apposed in subcuticular and skin layers (Fig. 4). The diagnosis was lymphosarcoma and the parotid lymph node was negative. The patient has undergone chemotherapy and is doing well 2-months postoperatively (Fig. 5).

Fig. 4 *Facial (A) and lateral (B) views after the wound was apposed in subcuticular and skin layers. The mass was diagnosed as lymphosarcoma.*

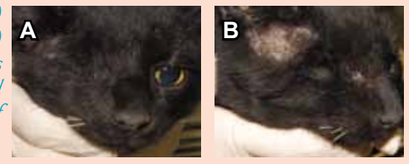

Fig. 5 *Facial (A) and lateral (B) views 8-weeks after surgery and the initiation of chemotherapy.*