Total Ear Canal Ablation (TECA) and Bulla Osteotomy

No matter what we do, some pets seem to have ear infections that just won't go away! They are frustrating for veterinary workers, for owners, and without question for those animals. After chronic ear infections, changes can occur in the normal cartilage of the ear canal, causing it to change to bone (calcify) and close up (stenosis), making ear infections difficult to impossible to treat. We call this "end stage ear disease," because no matter what medical therapy we try, we simply cannot get medicine to all parts of the affected ear with these anatomical changes. Plus, there can be bacteria present that simply are resistant to the medications we have available. These patients may benefit from Total Ear Canal Ablation (TECA) surgery.

TECA removes the external ear canal down to the level of the middle ear. We gently dissect the ear canal from surrounding tissues, including major vessels and nerves (like the facial nerve) to remove the canal and spare surrounding tissues all the way to the level of the tympanic membrane (ear drum) and middle ear. After the external canal is removed, the middle ear is entered. Because there is nowhere for the middle ear to drain when proliferative tissue in the ear canal prevents normal drainage, there is often large amounts of pus present in the middle ear. This is removed during a bulla osteotomy, where small bone cutters are used to enter the middle ear (bulla) and curettes are used to remove the middle ear contents (epithelium aka bulla lining, debris and pus). We remove the entire contents of the bulla to prevent possible infection later down the line. After lavaging the area thoroughly, a culture of the bulla is obtained; then the soft tissues are closed over the bulla and the skin is closed with skin sutures. A bandage is placed to help support the incisions.

There are a number of complications with this surgery. Nerve damage is the most common. Damage to the facial nerve may occur during dissection of the ear canal. The facial nerve wraps near the base of the external ear canal, and when chronic ear disease occurs, the inflammation and calcification can cause the facial nerve to become incorporated with the external ear canal. It can be damaged during removal of the canal, causing facial droop and/or decreased or absent blink reflex. A plexus of nerves runs through the middle ear and helps with control of balance. On occasion, these nerves may become damaged by previous infection or surgery, and the patient may be observed to have a head tilt, vertigo, and/or nystagmus (abnormal movements of the eyes). Most of these problems will resolve within the first month following surgery, although facial nerve damage can be lifelong.

Other complications of the surgery include abscess formation, decreased hearing, and excessive bleeding:
Abscess formation: Because these ear canals are infected, we can see that abscesses can form within the first week or two after surgery, or months to years after the initial surgery. When an abscess forms, it is recommended that surgery again be performed to remove any infected tissue that might be causing problems.
Decreased Hearing: Hearing can be affected by surgery; truthfully, most clients are pretty sure their pets aren't hearing well or at all due to the severe ear disease prior to

surgery anyway. It is possible that some pets may not be able to hear after a TECA if they still retained some hearing prior to surgery, although some clients report that they actually believe hearing improves after surgery.
Excessive Bleeding: There are several very large blood vessels that are in the area of the ear canal, and because of scar tissue that builds up in the surgical area, it is possible that they may be damaged with surgery and lead to bleeding because it can be difficult to visualize them, and they are abnormal due to all of the regional inflammation.

During surgery, a culture of the bulla is taken so that proper antibiotic usage can be continued. Your pet will go home with an antibiotic, but when culture results are returned, we may change, extend, or add to the current antibiotic regimen for a period of 2-4 more weeks. We usually will send home lubricant for the eyes, especially in the case of nerve dysfunction. Pain medications and anti-inflammatory medications will also be used to help with discomfort following surgery.

After a TECA, your pet will recover with a bandage over the ears to prevent trauma to the incisions, as well as with a small E-collar. The bandage will be changed prior to patient discharge and again at a recheck appointment. Sutures will be removed at approximately 2 weeks following surgery. It is recommended that your pet continue to wear the E-collar for at least 1 week after suture removal to prevent self-trauma to the incisions.

Many dogs require bilateral TECA to treat chronic end stage ear disease. If your pet is otherwise healthy, we will attempt to do both ears under the same anesthesia session if they are doing well, no complications of surgery have occurred, and the severity of the disease has not caused excessive surgical time on the first side. If TECAs are staged, then we will have your pet return for surgery on the second side in 2-4 weeks after the first surgery.

Cats may more often require TECA for mass removal than chronic infection, and because of this, often only one ear is affected. Cats more commonly may have a polyp that arises in the middle ear and needs to be removed via a Ventral Bulla Osteotomy (VBO). Often these polyps manifest as an airway obstruction as the polyps originate from the middle ear's lining, make their way down the Eustachian tubes into the nasopharynx, and cause noisy or difficult breathing. Sometimes, they protrude into the ear canal from the middle ear as they erode through the tympanic membrane (ear drum). A CT of the bullae shows a soft tissue density within the middle ears. In these cases, the external ear is normal and so no ear canal needs to be removed. Instead, an opening is made into the bulla itself, where it is entered from a ventral neck incision, a small drill and rongeurs are used to remove bone, and the contents of the middle ear are removed. Complications due to nerve irritation like drooping of the eye, pupillary constriction, nystagmus and vertigo may occur after the polyp is removed. Occasionally, if the polyp can be easily and firmly held at the base, it can be removed by traction/avulsion, where it is literally pulled out of the middle ear under anesthesia. This treatment has a higher rate of recurrence when compared to surgical VBO.

While there are definitely complications with this type of surgery, most owners, even when faced with using daily eye lubricant indefinitely, would gladly trade that off with the

constant treatments that external ear disease requires—oral medications, frequent ear cleanings, and medications in the ear. If our patients could talk, we guess they would agree, because a large number of owners say after about a month their pet has more energy than they have had in years!