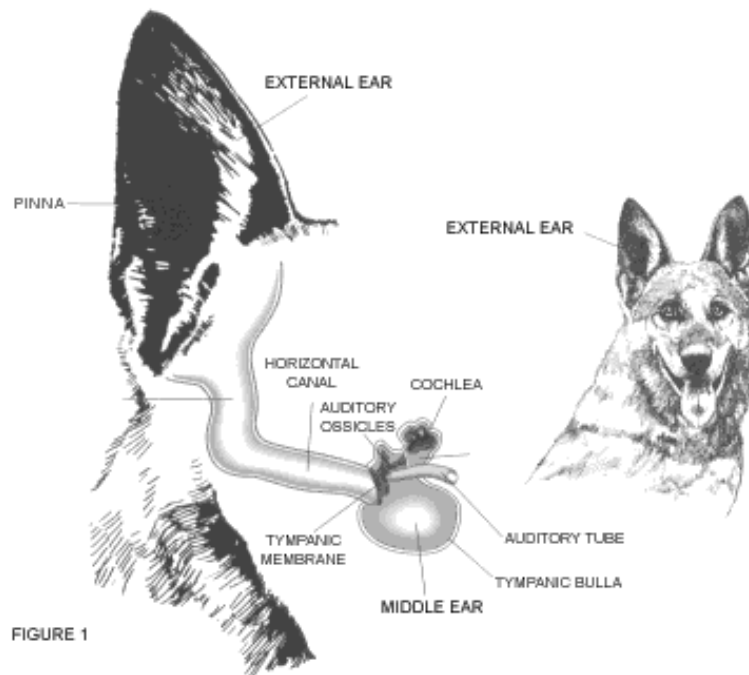


# Surgery Of The Ear

## Lateral Ear Resection Total Ear Canal Ablation Bulla Osteotomy

Chronic infections that thicken and occlude the ear canal and tumors that fill the middle ear or external ear canal are the most common problems requiring surgery on the ear. In fact, the conformation of the ear canal predisposes it to infection, especially in certain breeds of dogs such as Cocker Spaniels, Golden Retrievers and Poodles. Large, floppy ears, hair-filled ear canals, and the moist warm environment all contribute to infection that smolders and becomes very difficult to control or eliminate.

Since the ear cannot be kept dry, and because an infection thickens the tissues of the ear canal, proliferative debris is trapped in the ear. This prevents topical ear medications from contacting the infectious agents. The end result is a vicious cycle of worsening infection and severe permanent changes in the ear.



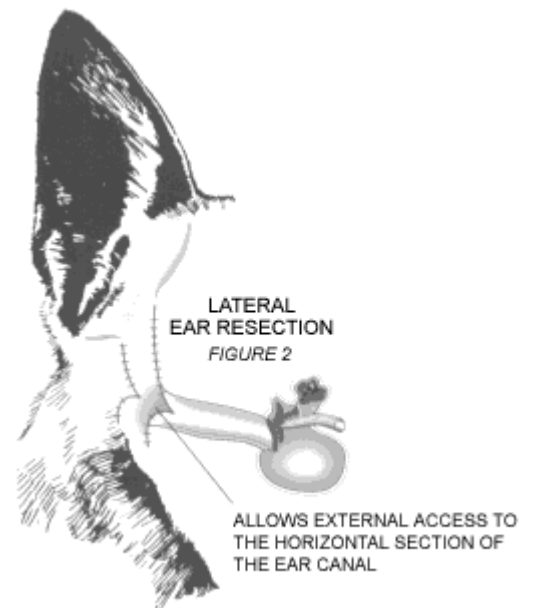
The ear is divided into three distinct regions (Fig.1). The EXTERNAL EAR is the ear canal. It is "L" shaped and ends at the tympanic membrane (ear drum). This shape predisposes the ear to infection in the dog because it creates a bottleneck for debris, ear wax, and moisture to accumulate and irritate the delicate canal wall. The MIDDLE EAR is within a hollow, bony portion of the skull, known as the bulla. The INNER EAR is located next to the bulla and is responsible for equilibrium and balance. Any of these areas may be affected in a disease process. They are best evaluated by direct otoscopic examination and, frequently, radiographic (x-ray) evaluation.

## Surgery

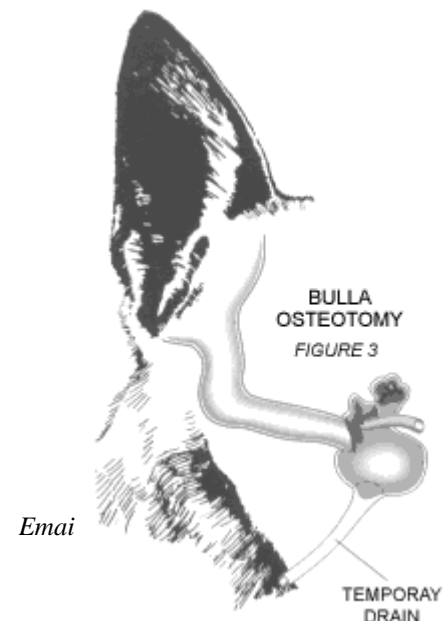
Three basic types of surgery can be performed depending upon the regions of the ear that are affected.

### 1. Lateral Ear Resection

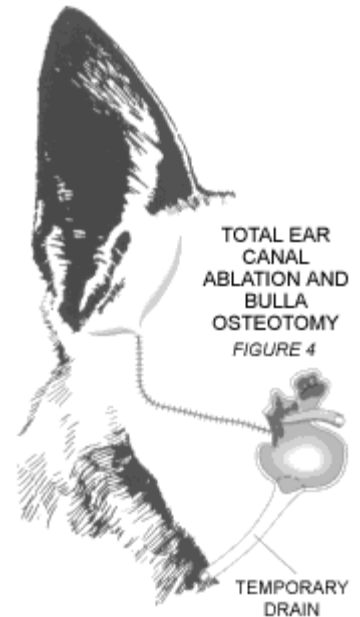
Early in the disease process it may be possible to perform a Lateral Ear Resection (Fig.2). This procedure is used for diseases of the external ear and involves removing and reconstructing a small lateral portion of the ear canal. This facilitates drainage of the ear canal and permits application of medications directly into the ear canal.



### 2. Bulla Osteotomy



Occasionally, only the middle ear is affected. This occurs when an ear canal infection causes the ear drum to rupture, allowing infection into the middle ear. The ear drum then "regrows" as the ear canal infection is treated. This is especially common in cats that have polyps. In these cases the bony wall of the bulla is opened surgically either from the side or from under the neck to gain access to the middle ear. Drains are placed to evacuate the infection. This procedure is known as a BULLA OSTEOTOMY (Fig.3).



### **3. Total Ear Canal Ablation And Bulla Osteotomy**

More severe infections require a more involved surgery called a Total Ear Canal Ablation and Bulla Osteotomy (Fig.4). Preoperative radiographs of the skull are generally recommended to assess changes that have taken place in the bony portion of the ear. The infected tissue and entire ear canal are removed. The bony portion of the ear (bulla) is opened to remove all of the infectious tissue from around the hearing apparatus. Bacterial cultures are obtained so that the infection may be treated with the appropriate antibiotics. On occasion, biopsies may be indicated to identify abnormal tissue in the ear. Drains are placed to encourage healthy tissue growth without abscess pocket formation.

The surgery is usually successful in alleviating the painful, debilitating chronic ear infections, as they cannot recur once the ear canal has been removed. Fortunately, hearing loss, which is directly related to the severity of the infection within the middle ear, is not always associated with this surgery. Dogs frequently retain some degree of hearing capacity, even without ear canals, and are much more comfortable.

### **Benefits of surgery**

- Typically a dog that has chronic deep seated ear infections will be much less active than a normal dog because they do not feel well.

- Most owners report that their dog is "a new dog" and act like a puppy again.
- Many owners report that their dog can hear better than prior to surgery. The reality is that the hearing likely is not improved, rather the dog is feeling better and is more willing to respond to auditory stimuli such as ringing of a doorbell etc.
- If both ears receive surgery, ear infections generally will be permanently cured.
- Considerable cost savings on ear medications and treatments after surgery is completed

## **Cosmetic Appearance Following Surgery**

The cosmetics following surgery on a dog with floppy ears is very good. After the surgery is complete, there will be no opening into the ear canal. Cats and dogs that have erect ears may have some drooping of the ear flap, but generally the outcome is very cosmetic.

## **Other considerations following surgery**

Chronic ear infections are usually not just a local disease. Frequently these pets have allergies or endocrine (hormonal) diseases that caused the ear infections. After your pet recovers from surgery, a dermatologist may need to be consulted to investigate and treat underlying skin disease.

If one of the ear canals is healthy at the time of surgery, it is common that chronic irreversible ear disease will develop and require total ear canal ablation in future. Chronic medical therapy such as cleaning of the ears, controlling ear infections, and controlling allergies can help to prevent end-stage irreversible ear disease.

## **Potential complications**

Even though rare, anesthetic death can occur. With the use of modern anesthetic protocols and extensive monitoring devices (blood pressure, EKG, pulse oxymetry, inspiratory and expiratory carbon dioxide levels, and respiration rate), the risk of problems with anesthesia is minimal.

Temporary post-operative facial nerve paralysis, which is the most common complication of total ear canal ablation, occurs in almost half the cases with only 5 to 10% of the patients having permanent damage. The more severe the ear disease, the greater the risk is of this problem. The facial nerve wraps around the base of the ear canal and is important for function of facial muscles. Many times the chronic ear infection causes scar tissue to entrap this nerve making surgical dissection very challenging. If this nerve is inadvertently bruised from the surgery your pet will not be

able to close the eyelids, and the lips will appear droopy on the operated side. Eye drops may be required to prevent drying of the eye until the nerve palsy has resolved. In most cases, facial nerve paralysis is a temporary problem and resolves within 2 months.

Pain upon opening the mouth or difficulty chewing can occur if the joint of the jaw, which is located just in front of the middle ear, gets inflamed from middle ear infection or from surgery. This problem typically resolves within 2 weeks.

Horner's syndrome is where the pupil becomes constricted and third eyelid covers part of the eye. This syndrome is caused by damage or inflammation of the sympathetic nerve that runs through the middle ear. This is an unusual complication as the nerve is fairly well protected in dogs.

Vestibular syndrome (balance problems) can occur as the balance organ is located in the inner ear. Less than 2% of patients develop this problem, but it is more common in those patients that have had previous balance problems or a head tilt.

Swelling after surgery is may occur and be due to oozing of blood or accumulation of clear fluid at the level of the ear. In some cases that swelling occurs shortly after surgery and results in swelling in the throat region which results in breathing difficulty. If this occurs, a breathing tube may need to be placed until the swelling goes down. In severe cases, a temporary tracheostomy (tube placed through neck region) may be needed. This is an uncommon complication occurring in about 5% of the patients and usually does not result in death.

**Recurrent infection is an uncommon complication, usually due to unresolved infection at the level of the middle ear or ascending infection from via the auditory tube, and may require a second surgery to clean t**