Aftercare and outcome

Patients will be completely deaf following removal of the ear canal, as most sound is transmitted through air along the ear canal. Some loud, deep vibrations may continue to be detected by bone conduction. If the TECA is performed in only one ear then hearing will not be affected significantly.

Patients often require hospitalisation for injectable pain relief for at least a couple of days following surgery. Surgical incisions will require protection from self-mutilation with 'buster' collars for 10–14 days, and hence exercise is restricted to a lead for this time also. Antibiotic therapy is broad-spectrum initially, being modified in the light of bacterial culture results to the most appropriate drug for a duration appropriate to the extent of infection. Deep infections of the bone may require prolonged antibiotic treatment for a number of weeks.

In cases where infection extends into the tissues surrounding the ear canal, often a silicon tube surgical drain is placed to allow fluid accumulating under the skin to be removed following surgery. In this case, patients require hospitalisation until fluid production diminishes.

Removed tissue may be assessed for the presence of abnormal and cancerous cells when there is a suspicion of more than just an infection within the ear canal. Prognosis and follow-up treatment or monitoring requirements will be discussed at the time of reassessment following surgery, usually 2–3 weeks after surgery when the surgical incision has healed. Consultation may be advised with one of our Oncology Specialists if necessary.

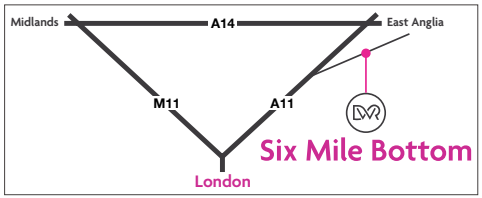
Appearance of the ear following surgery

How to arrange a referral appointment?

Following discussion with your first opinion veterinary surgeon, you may request to be referred to Dick White Referrals in order to benefit from our team of Specialist Soft Tissue Surgeons or you may come to us from our Dermatology Department. Our patients also benefit from Specialists in Anaesthesia and Analgesia to help keep them safe and comfortable during and after surgery. Our clinic is under veterinary supervision 24 hours/day and we have a dedicated nursing team caring for all patients during recovery.

What to expect following your consultation?

Following consultation, we usually aim to perform initial investigations within 24 hours. There will often be a delay of 24 hours following a CT or MRI scan to allow thorough evaluation of the images obtained before proceeding with surgery. If biopsies or a dermatology consultation are required prior to surgery longer delays for tissue processing or further medical management may be necessary in which case your pet may be discharged until all relevant information is available to plan the most appropriate treatment.



Dick White Referrals • Station Farm • London Road
Six Mile Bottom • Cambridgeshire CB8 0UH
E softtissuesurgery@dwr.co.uk
T +44 (0)1638 572012 • F +44 (0)1638 572013

www.dickwhitereferrals.com

Ear Surgery

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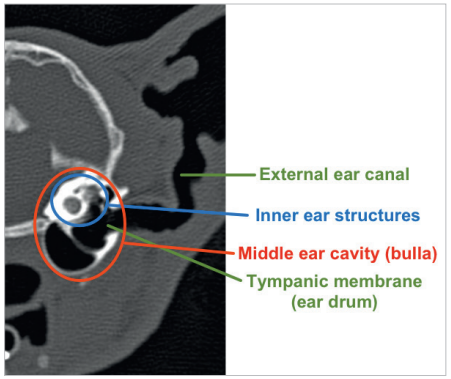
Ear anatomy

Under the pinna (ear flap) is a complex structure responsible both for hearing and aiding balance. The external ear canal is an L-shaped tube surrounded by thick cartilage, which heads vertically down and then around a bend, horizontally along to the tympanic membrane (ear drum), The tympanic membrane usual seals off the opening into the air-filled bone cavity of the bulla (middle ear), and helps to amplify and conduct sound inwards. The bulla is a single cavity in the dog, but a partitioned, double cavity in the cat (as shown below). Also within this cavity are the 3 smallest bones in the body (the malleus, incus and stapes), which transmit sound from the tympanic membrane to the inner ear. The inner ear is responsible for hearing, as well as balance. Additionally, the Eustachian tube connects the middle ear cavity to the back of the nose, allowing drainage and equalisation of air pressure.



Conditions of the ear

Otitis – refers to inflammation of the ear. It may affect the external ear canal (otitis externa), middle ear cavity (otitis media) or inner ear structures (otitis interna). In dogs, otitis externa is most common, usually resulting from infection, secondary to skin allergies, grass seeds entering the ear or tumours. Severe infections can progress inwards to affect the middle and inner ear structures. In cats, non-infectious inflammation of the middle ear is most commonly associated with benign polyp growths. These may also track along the Eustachian tube to affect the back of the nose.

Ear tumours most commonly arise from the lining of the ear canal and tend to occur in middle aged and older patients. These can be benign or malignant.

Cholesteatoma is an uncommon, non-cancerous overgrowth of the lining of the middle ear associated with swelling and thickening of the surrounding bone.

Symptoms of ear disease

Patients with disease of the external ear canal often have irritation which results in head shaking and/or rubbing at the ears; and may show redness, malodour and discharge from the opening of the ear canal. Middle ear disease can also result in head shaking. Pain in this region, close to the angle of the jaw, can also cause reluctance to open the mouth and hence reduced appetite. Inner ear involvement can lead to loss of balance, holding the head to one side and rapid flicking of the eyes from side to side. Progression of changes further internally to the brain can cause even more severe signs such as seizures. Obstruction of the ear canal will usually result in partial or complete deafness in the affected ear.

Clinical examination

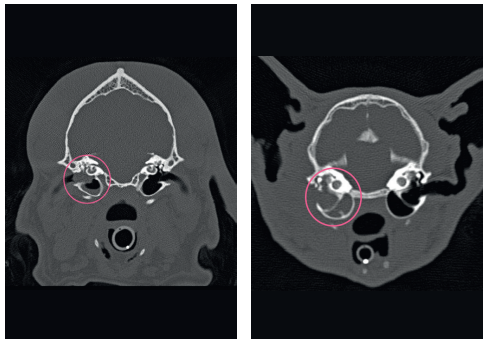
In the consultation room, examination is limited to a general assessment of the skin for evidence of infections/skin allergies. In co-operative patients it may be possible to look down the external ear canal with an otoscope, which should normally allow visualisation of the tympanic membrane.

Diagnostics

Swabs may be taken from the external ear canal for bacterial and fungal culture. If there is evidence of more widespread skin disease, a consultation with a dermatologist may also be advised.

It is not possible to visualise the middle and inner ear structures without performing imaging tests under anaesthesia. We often investigate for middle ear disease with a CT scan, which shows us the bone structures most clearly. In patients suspected to have inner ear changes and neurological signs, MRI may be preferred. Both CT and MRI take pictures in slices through the skull. If there are concerns that a tumour may be present, further scans are performed to assess for spread of disease.

Below are CT scans from a dog (left) and a cat (right), both with filling of the middle ear cavity on the left side of each picture.



Medical treatment

Infections of the ear canal are usually treated adequately with medications and sometimes middle and inner ear disease may also be managed with appropriate medical treatment. Ear drops are used to treat externally, in combination with oral painkillers and antibiotics to target deeper infections. Ear flushes under anaesthesia may also be necessary.

Repeat ear infections are very common due to underlying skin conditions, such as allergic skin disease, and so the ear infection is managed in parallel with a more generalised investigation and treatment of that underlying skin condition.

Ear surgery

Where infections are too severe to be managed medically, they fail to respond to medical treatment, owners are unable to administer medication or there are tumours growing within the ear canal, we often have to resort to surgical treatment. Typically surgery is aimed at removing all the diseased ear canal and abnormal tissue from the middle ear bulla, taking samples for bacteriology and histopathology testing of tumours and providing drainage where necessary. The most common surgical procedures we perform are detailed below:

Total Ear Canal Ablation/Lateral Bulla Osteotomy (TECA/LBO)

Total ear canal ablation refers to the complete removal of the external ear canal tube, from the opening at the base of the pinna to the tympanic membrane. Surgery is performed just below the ear flap, making an incision around the opening of the ear canal. Usually this surgery is combined with a thorough cleaning of the middle ear cavity through the opening covered by the tympanic membrane. The opening will commonly require enlarging to allow this to be completed, which we refer to as a lateral bulla osteotomy. Samples are collected for laboratory assessment to guide the requirement for further medical treatment and help give a prognosis for tumours. The opening below the pinna is closed with sutures at the end of surgery.

Although this surgery is usually very successful in removing the infection and eliminating pain from the ears, as with all surgeries there are risks. As well as the risk associated with any anaesthesia, there are other important structures adjacent to the ear canal, which may be compromised during surgery. Importantly, the facial nerve intimately wraps around the horizontal part of the ear canal. Surgical manipulation of this nerve may result in dysfunction, seen as drooping of the affected side of the face and inability to blink. In some patients this will resolve with time, within days or weeks of surgery, as the nerve recovers, but in others loss of function can be permanent. In the event of facial nerve dysfunction, application of eye drops will be advised, at least for a few weeks following surgery. There are also sizeable blood vessels adjacent to the ear canal, which should be avoided to minimise risk of bleeding during surgery. However, sometimes in our efforts to remove all the cartilage, bleeding from these vessels may occur, which we can usually control. When removing the ear canal it is imperative that all of the lining of the ear canal and middle ear cavity is removed carefully but delicately. Incomplete removal may result in recurrent abscess formation which is shown as a swelling beneath the scar line or discomfort when your pet opens its mouth to eat or yawn. Unfortunately repeat surgery is required if an abscess is suspected so we advise you to come back to us if this is suspected. The extensive cleaning of the middle ear that is often required also has the potential to damage the internal ear structures such as the balancing apparatus which may cause a head tilt to occur post operatively. If the patient already has a head tilt this usually appears worse after surgery although this is normally a temporary effect. A degree of head tilt may however be permanent due to the damage caused by the infection prior to surgery.

A patient with right-sided facial swelling due to an abscess.

Ventral Bulla Osteotomy (VBO)

Ventral bulla osteotomy refers to surgery directed only at the middle ear cavity in patients with normal external ear canals (or those that have middle ear disease but have previously undergone TECA). An incision is made under the chin, separating the muscles to access the middle ear. An opening is drilled into the bone and widened to allow thorough cleaning and sampling of the tissue for laboratory analysis.

This surgery usually avoids surgical manipulation of the facial nerve. However, in cats, nerves running adjacent to the middle ear cavity to the eye are very commonly irritated by surgery. Dysfunction of these nerve fibres results in Horner's syndrome (a small pupil, protrusion of the third eyelid and sinking of the eye). In most cases this complication resolves over days to weeks following surgery. Other complications are similar to those noted following TECA.

When needing to perform ear surgery on both sides, we may discuss staggeringing the procedures by a week or two.