

Specialist Referral Service
Willows Information Sheets

Laryngeal paralysis





Laryngeal paralysis tends to affect middle aged and older animals, especially large breed dogs such as Labrador Retrievers, Golden Retrievers, Weimeraners, Bernese Mountain Dogs, Great Danes etc.

Laryngeal paralysis

What is laryngeal paralysis?

Laryngeal paralysis is the term used to describe a functional failure of the larynx (voice box), particularly a failure to open the vocal cords during inspiration (breathing in).

Why is the larynx important?

The larynx has three main functions:

- To open the vocal cords during inspiration (breathing in) to facilitate sufficient air flow
- To snap the vocal cords shut during swallowing to prevent food and water entering the windpipe
- To allow vocalisation (e.g. barking) during expiration (breathing out)

All three functions are important to our pets but the first two are the most significant in terms of airway maintenance. Correct laryngeal function is therefore critical for providing and maintaining a properly functioning entrance to the trachea (windpipe).

What animals are affected?

Whilst there are some reports of congenital laryngeal paralysis which affects young dogs less than a year old, the majority of cases develop later and affect middle aged to older animals. Most cases presented to veterinary surgeons occur in dogs rather than cats, and particularly affect larger breeds such as Labrador Retrievers, Golden Retrievers, Weimaraners, Bernese Mountain Dogs, Great Danes etc., although smaller dogs and cats can be affected.

What are the signs of laryngeal paralysis?

The signs of laryngeal paralysis include:

- Increased inspiratory noise (loud rasping noise during breathing in)
- Coughing
- Weight loss
- Reduced exercise tolerance
- Collapse
- Reduced tolerance of increased temperature (less able to pant)
- Altered phonation (bark/mew sounds different)
- Problems swallowing food and/or water – affected animals have a tendency to cough and splutter
- Sudden respiratory distress, particularly when subjected to a warm environment

Unfortunately, left untreated this condition is often life threatening. If you have any concerns at all that your dog may be showing any of the signs listed above, please visit your primary care vet to seek advice and referral if necessary.

What are the causes of laryngeal paralysis?

The signs associated with laryngeal paralysis are usually caused by a dysfunction of one or both recurrent laryngeal nerves. These nerves supply the muscles that are responsible for holding the vocal cords open during inspiration (breathing in) and therefore failure to work effectively can result in partial obstruction of the upper airway. Often, these nerves are not the only ones affected and therefore incoordination or failure of function of nerves supplying other parts of the larynx (voice box) can contribute to food or water gaining access to the airway during swallowing and altered phonation (barking/mewing).

The more common causes of laryngeal paralysis include:

- 1 Peripheral polyneuropathy (generalised nerve dysfunction). In this condition the recurrent laryngeal nerves are dysfunctional or non-functional due to a pathology which affects many of the nerves in the body. The reason the condition often reveals itself first in the larynx may be that the recurrent laryngeal nerves are among the longest in the body and

they are therefore very susceptible to diseases that reduce their ability to conduct impulses. In addition, these nerves are among the few in our pets where failure of very fine control is easily noticed. A neurological examination carried out by a veterinary surgeon can reveal subtle signs of nerve dysfunction elsewhere in the body. The exact cause of the nerve dysfunction is often unknown

- 2 Trauma – trauma to the recurrent laryngeal nerves can lead to poor or absent function.
- 3 Iatrogenic – this is the term used to describe a condition resulting as a complication or result of medical treatment. Surgery of the neck in dogs and cats (e.g. thyroid gland removal) can result in unavoidable damage to the nerves supplying the larynx.
- 4 Tumours – tumours affecting the neck or front part of the chest cavity can place pressure on the nerves and cause them to malfunction.
- 5 Hormonal disturbances – poorly controlled hypothyroidism (under-active thyroid gland) can cause a peripheral neuropathy and has been proposed as a possible cause of laryngeal nerve dysfunction.

How is laryngeal paralysis investigated?

The veterinary surgeon may have a strong suspicion of the diagnosis of laryngeal paralysis from the age and breed of the patient, the sound of the respiratory pattern and discussion of the history with the owner.

A full clinical examination, including neurological assessment, is important early in the investigation of this disease.

Definitive diagnosis usually requires careful examination under general anaesthesia by an experienced veterinary surgeon. Unfortunately, recovery from general anaesthesia is associated with increased risks if an animal is suffering from laryngeal paralysis, and therefore definitive diagnosis is usually made immediately before surgical treatment is carried out under the same anaesthetic.

Before induction of general anaesthesia to definitively diagnose and treat the condition, it is important to carry out a number of checks in order to decide on the likely cause of the condition and therefore help in deciding whether surgical treatment is appropriate. The investigation will commonly involve:

- Blood samples – to check organ function and check for signs of thyroid dysfunction
- X-rays – to check for signs of pneumonia that can occur when food or water passes into the lungs, and also for signs of

megaesophagus (enlarged food pipe) or tumours which may alter the prognosis

- Ultrasound – an ultrasound scan of the neck can sometimes be helpful
- Electro-myogram (EMG), which is a specialised electrical nerve and muscle test, in cases where a generalised polyneuropathy is suspected

What are the treatment options for laryngeal paralysis?

The most effective and commonly performed surgical treatment for laryngeal paralysis is called a 'Tieback' or Unilateral Arytenoid Lateralisation (UAL). This involves permanently fixing one of the patient's vocal cords in an open position.

What is the prognosis for dogs showing signs of laryngeal paralysis?

Approximately 90-95% of animals undergoing a tieback procedure have a significantly improved airway and, therefore, improved quality of life following the procedure.

Complications that can occur in the minority of cases include:

- Haemorrhage (bleeding)
- Airway swelling
- Infection
- Aspiration pneumonia – infection of the lungs caused by food/water passing through the larynx. This can happen before the procedure but is also a risk after the procedure. Parts of the preoperative work-up will have tried to identify risk factors for this complication, and the surgeon will discuss these with you should the need arise. Aspiration pneumonia is usually diagnosed on X-ray and can often be treated with long courses of antibiotics. Unfortunately some infections do not respond and can result in terminal illness. This complication can occur immediately following the procedure or some time afterwards
- Seroma formation (fluid accumulation in the loose neck tissue of the animal, usually of little clinical significance)
- Suture failure or cartilage fracture – this will result in failure of the procedure

Permanently holding one of the vocal cords open can greatly improve the air flow in an animal suffering complete paralysis of both sides of the larynx. Unfortunately, the procedure will also reduce the patient's ability to cough effectively, and may also increase the risk of food and drink gaining access to the airway. The potential

for aspiration pneumonia and complications resulting from surgery involving structures of the airway result in the requirement for careful investigation of the patients and careful discussion with the owner prior to surgery.

What if I decide not to have the procedure performed on my animal?

Laryngeal tieback surgery is usually only performed on animals suffering clinical signs and often only on animals suffering bilateral paralysis. Those animals not receiving surgery must be monitored very closely indeed for signs of deterioration in function or aspiration pneumonia and these patients MUST avoid heat stress.

Unfortunately, once diagnosed the condition is usually progressive and so there will always be a degree of anxiety when considering those cases with some remaining function of the recurrent laryngeal nerves. These animals may still have some function of the larynx, but are at risk of deterioration in the future. The decision regarding when to operate is usually based on assessment of the risks and benefits associated with surgery and the potential for sudden severe decompensation without surgery. This decision is made on a case by case basis and detailed discussion with the specialist veterinary surgeon is advised.

What should I do after the procedure to help manage the condition?

There are a number of management changes that can make a significant contribution to ongoing success following a laryngeal tieback procedure:

- Never use a neck collar for restraint or to lead walk your dog – a harness should be used
- Avoid dry, dusty food which may be more prone to being aspirated (breathed in)
- Avoid heat stress – patients that have had tieback surgery still have a degree of compromise to their upper airway and should never be allowed to become stressed by heat
- Monitor your pet for signs of malaise or attempts to cough that may indicate pneumonia – consult a veterinary surgeon if you are at all concerned

If you have any queries or concerns, please do not hesitate to [contact us](#).

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