

Laryngeal Paralysis

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What causes laryngeal paralysis?

Laryngeal paralysis (paralysis of the voice box) occurs when the larynx (voice box) is unable to open in response to exercise or respiratory demands. There are several possible causes of laryngeal paralysis. Rarely some animals can be born with the condition. Trauma to the laryngeal or neck region can affect the nerves in that area (e.g. neck surgery or bite wounds) and cancerous infiltration of the nerve (e.g. from a throat or neck mass) may also be a cause of laryngeal paralysis in some dogs although this is very uncommon.

For the vast majority of cases, laryngeal paralysis occurs in the older medium to large breed dog (median 9.5 years) and is due to a progressive failure of the nerves supplying the larynx. This is now known to be part of a more generalised age-related nerve degeneration with the laryngeal nerves being initially affected as these are the fastest longest nerves in the body. Ultimately it is common for changes to also affect the nerves that co-ordinate and move the limbs and control oesophageal function (movement of food from the mouth to the stomach). This is generally a slowly progressive condition and it may be months or years before further clinical signs become apparent over the laryngeal paralysis. To recognise these more generalised nerve changes rather than just those to the larynx, laryngeal paralysis is also now known as geriatric-onset laryngeal paralysis polyneuropathy (GOLPP)

Laryngeal paralysis can also occur much less commonly in the smaller breed dog and even the cat. It is likely that differences in lifestyle and respiratory dynamics limit the clinical expression of the disease in these smaller animals.

How would I know if my dog has laryngeal paralysis?

Laryngeal disease may cause the following clinical signs: exercise intolerance, noisy breathing, coughing and gagging, and change or loss of voice.

Many of the clinical signs of laryngeal disease that may be apparent (e.g. a soft cough, exercise intolerance) are often attributed to 'old age' or 'heart disease', particularly as they will develop insidiously. However, there are two audible features that are very characteristic of laryngeal disease - a soft 'ineffectual' cough, and inspiratory stridor (noise on inspiration).

Many dogs with laryngeal disease show no symptoms at rest. However, a rapid worsening of the dog's breathing can occur if the dog becomes excited, has more intensive exercise than usual, or is unable to find a cool area on a hot day. This usually responds to rest, reducing stress and cooling down for the majority of dogs but it is important to do this as soon as possible and seek veterinary attention. The key risk however is that some dogs (especially if suffering for a long period of time) can progress to developing signs of extreme respiratory distress and this can rapidly escalate into a life-threatening crisis due to lack of oxygen if appropriate action is not taken immediately. This obviously is a veterinary emergency and urgent treatment to alleviate the obstructive process will be required. Dogs who have been showing progressively worsening signs over a period of time (especially very loud breathing with any activity or inability to exercise at all) are much more at risk of developing these life-threatening signs.

How will my vet know if my dog has laryngeal paralysis?

The breathing noises associated with laryngeal disease can be very characteristic, and the sensitivity of physical examination alone has been shown to be more than 90% for clinicians experienced with the disease. So there is usually a very strong suspicion of the condition from the dog's history and signs.

Definitive diagnosis of the condition requires visual assessment of the larynx and its movement under a light plane of anaesthesia. This process can require experience to ensure accuracy as anaesthesia will itself induce changes to laryngeal function. There may also be an increased risk associated with anaesthesia in these patients due to the presence of their disease and recovery from anaesthesia can be more challenging if the problem is just diagnosed but not treated. For this reason for dogs showing the characteristic signs, it is best for the larynx to be assessed by an experienced veterinary surgeon under a light plane of anaesthesia who can then undertake surgical management under the same anaesthetic if required to minimise risks on recovery. Therefore referral of the dog to a specialist surgical centre for further diagnostic investigation and management should be considered.

What other considerations are there?

Most dogs with laryngeal paralysis are elderly, and may have features of other disease or hormonal imbalances on examination or blood work. The challenge for the clinician is to recognise the significance of these other disease processes on the presenting condition. In most cases, definitive surgical management of the laryngeal disease is the treatment of choice.

Routine diagnostic work-up of the patient with laryngeal disease would include a complete physical examination, systemic blood tests, and x-rays of the chest. Pursuit of any abnormalities detected in this diagnostic investigation will depend on the severity of the breathing difficulty, and the impact of any additional problem on the suspected laryngeal paralysis.

How is laryngeal paralysis treated?

Definitive management of laryngeal paralysis is by surgery at which the vocal fold(s) are permanently secured in an open position (laryngeal tie-back or laryngoplasty). Surgeons differ in their preference of suture location and placement, but clinical function appears to be similar regardless of technique. Most surgeons only secure a single vocal fold (usually the left) as this is all that seems to be necessary for most dogs, although for occasional individuals surgery on both sides may be required.

Laryngeal 'tie-back' surgery should only be performed by a surgeon who is experienced with the technique. The consequences of a failed procedure can be devastating for the patient, and there are limited salvage options available. In experienced hands, however, good success rates are reported, with few unexpected complications.

The most significant complication is aspiration pneumonia. This is a risk before as well as after surgery as it is associated with a failure of the larynx to close appropriately on swallowing. This is more likely to occur in those animals with oesophageal dysfunction (megaesophagus) or other eating difficulties prior to surgery. Because these clinical features are usually evident prior to surgery the risk of this complication occurring can be determined.

Will my pet get better?

Prompt and effective surgical management of laryngeal paralysis are generally associated with a major improvement in breathing and restoration of a good quality of life. Some animals may have a persistent cough, and low grade noise may still be heard when they pant. Usually, however, their restored airway enables them to exercise at a good level for their age following the initial postoperative period of four to six weeks of rest while the surgical site heals.

The generalised polyneuropathy will continue to progress and following recovery from surgery regular exercise is important to maintain muscle mass therefore minimising the effects resulting from further nerve degeneration in the limbs. For some older dogs exercise in a hydrotherapy 'water walker' can be an ideal form of exercise as the dogs can be observed

closely and the buoyancy of the water provides reduced weight conditions and reduces stress on joints. Conventional swimming should be avoided due to the risk of aspiration of water into the airway following laryngeal 'tieback' surgery. If you have concerns about your own dog showing signs of this condition you should seek advice from your veterinary surgeon.

Reference: <https://cvm.msu.edu/scs/research-initiatives/golpp/living-with-golpp>