

Laryngeal Paralysis

ABOUT THE DIAGNOSIS

Laryngeal paralysis is a condition that affects dogs and, rarely, cats. The larynx is commonly called the voice box because it contains the vocal cords. It is situated in the neck near the beginning of the windpipe (trachea), which carries air to and from the lungs during breathing. As air moves over the vocal cords, sound or voice is produced. The opening of the larynx consists, in part, of two “gates.” These gates are cartilage plates that are told by nerves when to open or close. When a dog swallows, the cartilages close tightly to prevent food and water from entering the lungs. On the other hand, these cartilage gates should open fully to allow an animal to breathe in (inhale). They open to a lesser degree when breathing out air (exhale).

In a dog with laryngeal paralysis, one or both of the cartilages (the “gates”) responsible for opening and closing the larynx are unable to open properly. Early on in the process when there is still some movement, the only change may be noisy breathing or a change in the bark or meow. As paralysis worsens, breathing can become labored with little air able to enter the lungs. This will cause the dog to tire easily on exercise, make loud noises that sound like wheezes when breathing in (called stridor), or even develop distress trying to breathe. In the worst-case scenario, this can lead to collapse and death. Often these symptoms are worse after exercise or in hot weather. This problem most commonly occurs in large breed, adult dogs, with the age of first symptoms typically being between 6 and 12 years of age. While any dog breed (or even cat) can be affected, the Labrador retriever is the single most often affected breed. Rarely, in some breeds such as the Bouvier des Flandres, the condition can be present at birth (congenital).

The cause of laryngeal paralysis is usually unknown (idiopathic). Other diseases have been linked to this condition, although a true cause-and-effect relationship has not yet been proven. These diseases include hypothyroidism (decreased thyroid gland activity) and hyperadrenocorticism (Cushing’s disease, which is an increased amount of certain hormones responsible for metabolism). A rare cause of laryngeal paralysis is the presence of a tumor near the nerve(s) that control(s) the movement of the cartilages or nerve injury from trauma. Very often, dogs with laryngeal paralysis have or will develop dysfunction in other nerves in the body (called polyneuropathy). Nerve dysfunction elsewhere in the body can cause other signs, such as weakness in the rear legs.

Outward symptoms of laryngeal paralysis include the development of breathing problems when a dog exercises, becomes excited, or if the dog becomes overheated. A characteristic wheezing sound during exertion is very suggestive of laryngeal paralysis, and you may help your veterinarian and your dog enormously by videorecording this (including audio)—or conversely, capturing a video recording of normal breathing sounds during exercise, making laryngeal paralysis much less likely—for your next veterinary visit; be sure to include audio so the veterinarian can hear the sound of breathing, but avoid overexerting your dog beyond his/her usual routine, as excessive activity could be dangerous. Dogs with laryngeal paralysis often will gag or cough when eating or drinking. Because movements of the larynx are uncoordinated in dogs with laryngeal paralysis, food can slip through to the lungs and cause pneumonia (aspiration). With laryngeal paralysis, a dog’s voice can change, and a change in the sound of the bark is often one of the early markers of laryngeal paralysis.

Laryngeal paralysis is often suspected based on symptoms, the breed and age of the dog, and the history (forming a “presumptive diagnosis”). The condition is definitively confirmed with a procedure called laryngoscopy. For laryngoscopy, a dog is lightly sedated. Either through direct visualization or using an endoscope (small tube that has a camera attached to its end), the movement of the cartilages is observed as the dog breathes; limited movement indicates laryngeal paralysis. Ultrasound examination of the larynx or fluoroscopic moving picture X-rays are novel approaches that can also help to diagnose this disease.

Your veterinarian may take x-rays of your dog’s neck and chest to help determine if pneumonia or any other respiratory problems may be occurring simultaneously. Blood samples may be taken at several points in time to help to determine if the thyroid and adrenal glands are functioning properly.

LIVING WITH THE DIAGNOSIS

Laryngeal paralysis is a progressively worsening, potentially serious condition. When a dog suffers a sudden breathing crisis as a result of this condition, it is an emergency. In such situations of respiratory distress, try to keep the dog as calm as possible. If the dog has become severely overheated, cool damp cloths can be placed on the footpads and belly. If outside, an overheated dog can be hosed down with cool water. *Do not* place an overheated dog in an ice bath because this causes the body temperature to fall too quickly, which can cause other serious problems. If there is labored breathing beyond normal panting, take your dog to your veterinarian or the closest emergency clinic immediately, before a life-threatening crisis develops.

Once the diagnosis of laryngeal paralysis is confirmed, it is important to keep the dog out of situations that cause excitement. Do not allow the dog to become overheated; dogs regulate their temperature through breathing, so laryngeal paralysis makes them very prone to overheating or heat stroke. For dogs with moderate or severe laryngeal paralysis, a surgical procedure can be performed that props the paralyzed larynx in a partially open position and prevents episodes of respiratory distress from recurring. Unfortunately, the surgery doesn’t “fix” the larynx, it just ties open one of the closed gates.

TREATMENT

Sudden breathing difficulties caused by laryngeal paralysis require immediate intervention. Ironically, the harder the pet works to breathe, the less air will flow through the larynx. For this reason, the veterinarian may give a sedative to help the dog calm down and not try so hard to work at breathing. An antiinflammatory (e.g., a corticosteroid injection) can be given to help control swelling in the throat. In some cases, a veterinarian will need to temporarily insert a tube into the windpipe, through which the dog can breathe (tracheostomy) and prevent suffocation.

Long-term treatment involves a surgical procedure. In this procedure, part of the laryngeal cartilage that does not open properly is sutured into a permanently open position (tieback procedure). This surgery is often performed by a veterinary surgical specialist. Many factors must be considered before a dog can undergo this surgery; not all dogs with laryngeal paralysis are candidates for this surgery. Your veterinarian can discuss this option with you. Importantly, this surgical procedure increases the risk of a dog accidentally inhaling food into the trachea and lungs, a process

that can be very serious and seems to affect approximately 20% of patients postoperatively. This risk is lifelong after the surgery, but it is worth taking if laryngeal paralysis is sufficiently severe that withholding surgery would carry an even greater risk of problems due to unchecked laryngeal paralysis. Choosing just when is the right time for surgery can be difficult because there are dangers associated with doing the surgery either too early or too late in the disease process.

Aftercare is an essential component of this surgery, and you play a vital role in this regard. Feeding needs to be reintroduced carefully, because a dog's throat function is altered by the surgery. Many dogs do better eating from floor level (as usual), so avoid raising the food bowl. Some dogs do better with dry food/kibble, and virtually all dogs will benefit from eating slowly, which may require you to offer small meals, a bit at a time. Overall, the goal is to find a feeding approach that causes the least gagging or coughing.

Postoperative monitoring at home is also important: observing your dog for at least a few minutes three or more times a day can help you identify breathing difficulties that can indicate swelling or loosening of the surgical site (causing wheezy, noisy breathing in the throat) or labored, heavy breathing, often with fits of raspy coughing and ultimately listlessness and loss of energy and appetite; the latter symptoms could indicate aspiration pneumonitis, when particles of food have been inhaled into the lungs. Swelling, surgical breakdown, or aspiration pneumonitis are postoperative complications that can occur, overall, in a significant percentage (20%) of dogs that undergo surgery for laryngeal paralysis. Watching for symptoms of these problems at home can help your veterinarian intervene early if these problems occur; there is no better alternative than the surgery when a dog has laryngeal paralysis, and this monitoring helps reduce the impact of complications should they occur.

Lifestyle modifications can help dogs with laryngeal paralysis before and after surgery. Maintaining a lean body weight is very helpful for your dog. Avoid using a neck collar that puts pressure on the neck and can cause coughing if the dog pulls. Avoid strenuous exercise for your dog, or any exercise on a hot, humid day. Most dogs with laryngeal paralysis should avoid swimming because the larynx can't protect from inhaling water the way that it should.

DOs

- Give medications exactly as directed.
- Begin a weight loss program for your dog if there is any degree of overweight or obesity; excess body fat limits the amount of expansion room for the lungs during breathing, increases the work of exercising and therefore the intensity of breathing, and makes dogs prone to overheating, all of which are reversible but otherwise are very serious potential triggers for a future laryngeal paralysis crisis.
- See your veterinarian or go to the nearest emergency clinic if your dog is having breathing difficulty.

- Consider consultation with a veterinary specialist in internal medicine or surgery if surgery seems likely to offer a benefit, or if there are questions regarding the diagnosis. A veterinary neurologist can be very helpful as well if other nerves in the body seem to be dysfunctional. In North America, you can find these specialists at www.vetspecialists.com, www.ACVIM.org, or www.ACVS.org; in Europe, www.ecvn.org and www.ECVS.org.

DON'Ts

- Do not allow your dog to become overheated or overexcited, if possible.
- Do not force your dog to continue exercising if breathing problems begin.
- Do not use an ice bath to cool an overheated dog, but use cool water or compresses instead.

WHEN TO CALL YOUR VETERINARIAN

- If any of the symptoms listed above arises for the first time in your dog.
- If your dog has had laryngeal surgery and develops gagging, coughing, or labored breathing when eating or drinking or signs of not feeling well (lethargy, loss of appetite, etc.).
- If you are unable to give medicine as scheduled.
- If you cannot return for a scheduled visit.

SIGNS TO WATCH FOR

- Breathing-related difficulties as described above, which warrant an immediate recheck.

Other information that may be useful (aspiration): "How-To" Client Education Sheets:

- How to Count Respirations and Monitor Respiratory Effort
- How to Provide Home Respiratory Therapy (Humidification, Nebulization, Coupage)
- How to Take a Pet's Temperature



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