

## Post-Operative Expectations

Patients are hospitalized for 1-3 days and maintained on IV fluids during gradual reintroduction of oral intake. Sedation is used as needed. Dogs are walked with a body harness, not a leash and collar, for life.

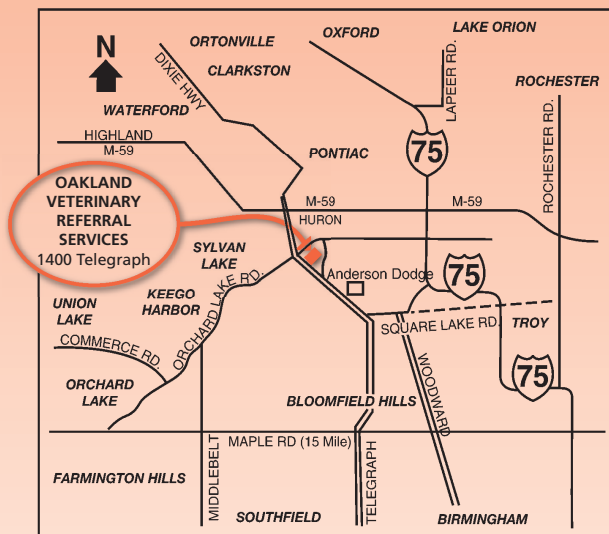
Post-operative swelling is occasionally noted and is treated with anti-inflammatory medication. Rarely, dogs develop a seroma (fluid pocket under the incision) which resolves in a few weeks. Some dogs have coughing after eating and drinking, which typically improves with time. Acute failure of the lateralization suture is rare, resulting from fracture or tearing from the cartilage and may require the same procedure to be performed on the opposite side. Dogs are at a higher risk for aspiration pneumonia after this procedure, which may be life threatening. Due to increased risk of aspiration pneumonia, dogs are fed canned food diets and prohibited from swimming, as directed. Dogs with laryngeal paralysis will always have an altered (hoarse sounding) bark. Overall, surgery for laryngeal paralysis can be very rewarding and life-saving.



Specialty veterinary medicine is a relatively new advancement in pet care. Similar to specialists in human medicine, board-certified veterinary specialists focus their education and services in one specific area.

Have you been referred?  
Things to bring at the time of your consultation:

- Recent radiographs and blood work
- Medications your pet is being given



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## Oakland Veterinary Referral Services



# SURGERY

# Laryngeal Paralysis

Laryngeal paralysis is a progressively incapacitating disease of the upper airway. It generally affects geriatric patients (especially older Labradors) and manifests as progressive inspiratory obstruction. This obstruction leads to decreased exercise tolerance and increased respiratory noise (stridor). Clinical signs are often accepted as signs of aging and dismissed as inevitable. In advanced cases, acute respiratory distress may occur and may be life-threatening. Timely diagnosis and treatment often results in significantly improved quality of life for these patients.

Most dogs that present with laryngeal paralysis are elderly (mean 9.5 years) large to giant breeds. A congenital form of laryngeal paralysis has been noted in Bouviers, Siberian Huskys, Bull Terriers and Dalmatians that develop clinical signs at <1 year of age. Less frequently, smaller breeds have been affected. Males are affected 2-4 times more often than females.

## What Causes Laryngeal Paralysis?

Opening of the upper airway during times of increased need (i.e., stress, exercise) occurs with the contraction of the cricoarytenoideus dorsalis (CAD) muscles. With loss of innervation to these muscles, the cartilages hang loosely, failing to open on inhalation. The relaxed cartilages vibrate with air passing through, giving a characteristic sound called stridor. The more excited a dog becomes, the more force used to inhale, which causes both sides to collapse on themselves and may obstruct breathing. Dogs at this point often develop exercise intolerance (they stop running to catch their breath or may even collapse) or get a gray/purple/blue color to the tongue. Once they relax, they stop collapsing the larynx and can breathe "normally" again.

Most of the time this is an idiopathic condition, meaning that no cause is identified. However, it can be caused by other diseases such as cancer, lung disease or hypothyroidism.

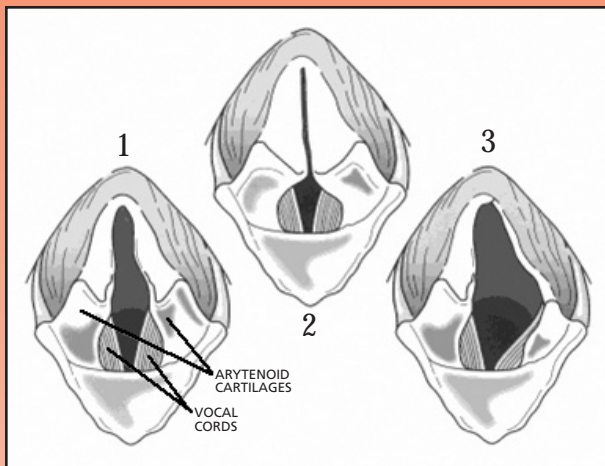


Diagram of 1) normal laryngeal cartilage, 2) collapsed cartilage affected by laryngeal paralysis, and 3) cartilage after a tie-back procedure.

## What Are the Symptoms?

Dogs with laryngeal paralysis have gradually progressive exercise intolerance. Progressive inspiratory respiratory noise and altered bark are often noted. Many dogs will show no symptoms at rest. Some dogs gag, vomit, cough or have frequent "clearing of the throat." Other dogs present with a history of significant respiratory difficulties including episodes of collapse, cyanosis (blue/gray/purple discoloration of the tongue), and hyperthermia (increased temperature) that require emergency treatment. Most dogs have exacerbation of their clinical signs with obesity or in hot, humid weather, typically after exercise or riding in a hot car. Cases are often initially evaluated for neurological or cardiac diseases. All dogs with laryngeal paralysis are at risk for developing aspiration pneumonia, and may have pneumonia at presentation.

## How Is It Diagnosed?

Given the age of the patients, complete work up for concurrent disease must be done in all non-emergency patients. This includes a complete physical exam with emphasis on cardiopulmonary and neurological systems and routine blood and thyroid testing. Chest and neck radiographs and an abdominal ultrasound may be recommended to identify any pre-existing disease.

Definitive diagnosis requires evaluation of laryngeal function under light anesthesia. Reduced opening or complete paralysis of the cartilages is diagnostic. It is important to differentiate laryngeal paralysis, which will respond to surgery, from laryngeal collapse, which will not.

## Conservative Treatment Options

Conservative management is recommended for dogs with no exercise intolerance or dyspnea (difficulty breathing). Weight reduction, use of a harness (instead of a leash and collar) and avoidance of stressful situations are initiated. Use of sedatives may be required preemptively in stressful events (e.g., trips to the veterinarian, prior to company or grooming) to prevent excitement-induced breathing difficulty. In hot weather, exercise is avoided. Dogs with laryngeal paralysis may die very quickly if left in the car during the summer.

## Surgical Management

Surgical treatment is palliative as it cannot re-establish normal function of the larynx. An arytenoid tie-back/lateralization is performed on the left side to hold that side of the airway open with permanent sutures. Intra-operative evaluation of the airway is performed by an assistant or anesthesiologist to ensure that the opening is sufficient. This surgery is a compromise: it provides unhindered respiration under all normal conditions but does not decrease the chance of aspiration of food and liquids.

## Prognosis

Animals with mild clinical signs do well without surgery. Animals with significant compromise typically require surgical intervention. Most animals show significant improvement by the time they are discharged from the hospital. Decreased stridor and increased exercise tolerance are seen in >90% of cases. Aspiration pneumonia occasionally develops either as an intermittent problem or a long-term disease. Dogs that have coughing, decreased appetite or increased respiratory effort should be seen by a veterinarian immediately.