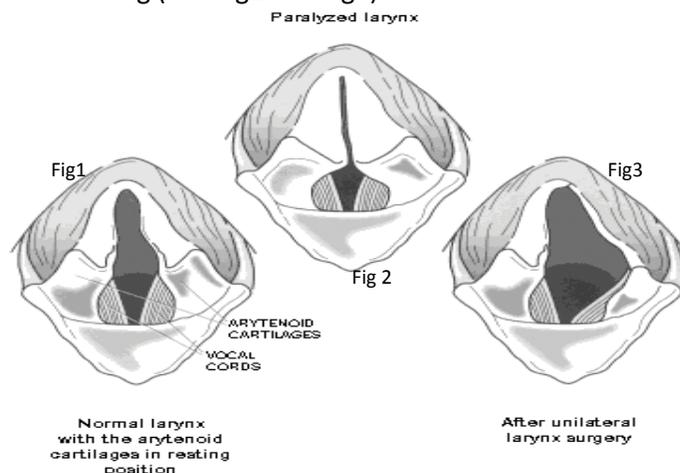




## Laryngeal Paralysis

The larynx (sometimes called the voice box) is a muscular and cartilaginous structure that connects the pharynx (throat) and trachea (windpipe). The larynx contains the vocal cords. These are the muscular structures within the airway that vibrate when air passes by them allowing us to talk, bark, or meow. The opening to the larynx is covered by epiglottis, a large muscular flap that covers the windpipe when we swallow to prevent food from entering the trachea. The larynx also closes to prevent aspiration of food and water. This function of the larynx is so important that, of the eight muscles of the larynx, seven of them are responsible for closure. The remaining muscle (cricothyroid muscle) functions to open the laryngeal portion of the airway by abducting (pulling open) the arytenoid cartilages when we inspire. If the muscle stops functioning properly, the airway cannot remain open as we breathe, causing gasping episodes which may become life threatening (See Fig1 and Fig3).



Laryngeal paralysis is a failure of the laryngeal cartilages to open during inspiration, creating a

partial or complete upper airway obstruction (see Fig2). It is usually caused by dysfunction of the nerve (recurrent laryngeal nerve) that controls the laryngeal musculature. This can be secondary to a disease process that affects all of the nerves of the body (polyneuropathy) or secondary to a traumatic event that affects only the laryngeal innervation. Generalized neuromuscular or muscular disease can also result in laryngeal paralysis. Most of these processes, with the exception of a traumatic episode, are slowly progressive until an acute exacerbation cause a life threatening crisis. In a life threatening crisis, an emergency tracheotomy may be necessary to bypass the compromised airway until definitive surgical correction can be performed.

### Clinical Signs

The clinical signs of laryngeal paralysis most commonly begin as a vague change in the Quality of the voice and then progress to noisy breathing (sometimes called "roaring"), inspiratory dyspnea (difficulty breathing), and stridor (noisy gagging or coughing). Cyanosis (a blue tinge to the tongue due to lack of oxygen) may also be present. A lack of oxygen is life threatening. The signs of laryngeal paralysis are often made worse by exercise, hot and humid weather, or obesity. Aspiration pneumonia can occur during violent gasping and gagging episodes.

### Diagnoses and Treatment

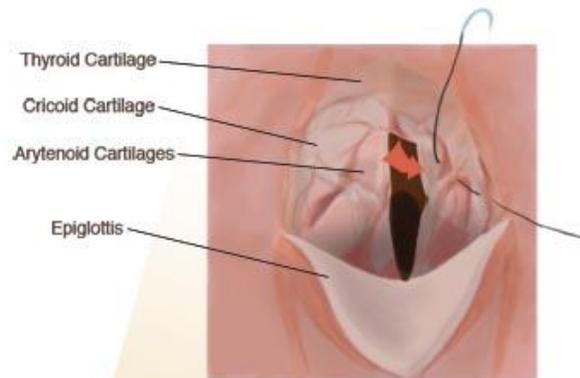
The diagnosis of laryngeal paralysis involves direct observation of arytenoid function during respiration. This is usually performed

under heavy sedation or light anesthesia. During normal breathing, the larynx is abducted (pulled open). This allows air to flow down the trachea and into the lungs. Dogs with compromised airflow through the larynx must work harder to fill their lungs with air. This decreases airway pressure and pulls the laryngeal walls into the airway. The laryngeal walls close in front of the opening to the trachea and block the flow of air.

### ARYTENOID LATERALIZATION

Emergency procedures such as sedation, oxygen corticosteroids, or tracheotomy may be required for stabilization, but surgery is the only permanent correction for laryngeal paralysis. An arytenoid lateralization is a procedure that uses sutures to hold the laryngeal portion of the airway open. This can be performed either unilaterally (one side) (see Fig3) or bilaterally (both sides). The suture is passed through the arytenoid cartilage to the outside of the larynx and tied. This abducts (pulls out) the arytenoid cartilage and prevents arytenoid collapse.

Postoperative hospitalization for 24-72 hrs is required due to the potential for aspiration and laryngeal swelling. Broad spectrum antibiotics and anti-inflammatory medications are administered for 5-10 days. Occasionally, sedatives may be required. It is also important that the dog not be allowed heavy exercise during hot or humid weather and that excessive weight gain is avoided.



The red arrow denotes improved airway diameter after 'tie-back surgery'



### D.C. Vets, Inc.

**Tommy L. Walker, DVM, MS, Diplomate, ACVS**

**116 East Cornwell Lane, Purcellville, VA 20132**

**Phone: (540)338-0878 Fax: (540)338-0879**

**info@dcvets.org**

**www.dcvets.org**