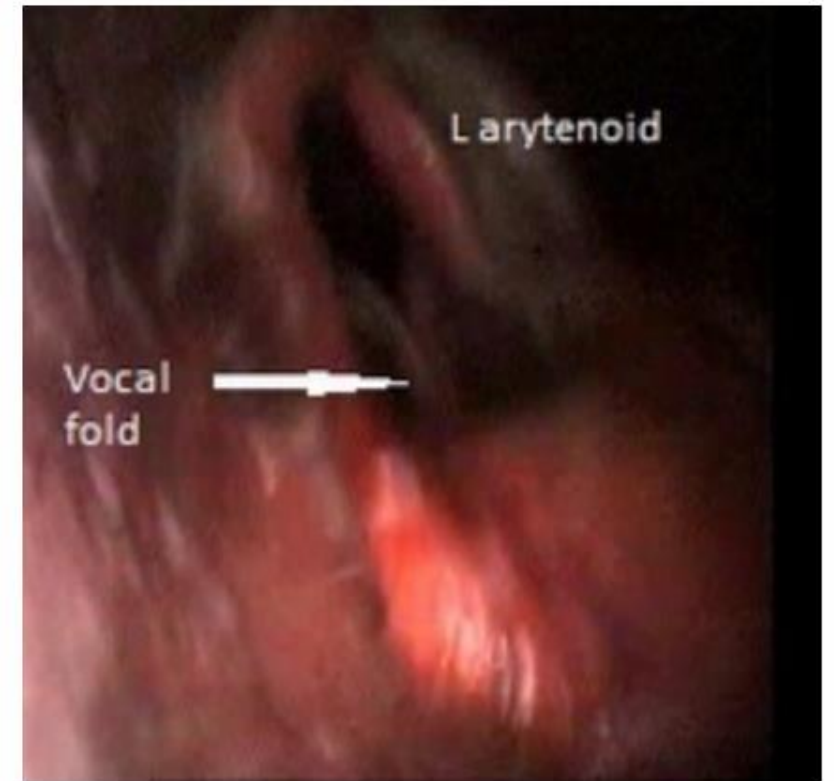


INDICATIONS FOR VENTRICULOCORDECTOMY SURGERY

1. Vocal Fold Collapse

Vocal fold collapse is a condition observed on videoendoscopy during high-speed exercise. It occasionally occurs in horses with grade 3 laryngeal movements. Rarely, it is observed in some horses after laryngoplasty when a concurrent ventriculectomy has not been performed.

Clinical signs and history are similar to those of laryngeal hemiplegia. Diagnosis is confirmed on slow motion playback of an exercising videoendoscopic examination. Treatment for this condition is bilateral ventriculocordecotomy.



Collapse of both the vocal folds. This horse is also a "roarer", note the vertical position of the left arytenoid cartilage compared with the right.

2. Laryngeal Hemiplegia (Recurrent Laryngeal Neuropathy)



Figure 44-1. Endoscopic appearance of the normal larynx during inhalation, showing maximal abduction of the arytenoid cartilages and a normal-appearing epiglottis.



Figure 44-2. Endoscopic appearance of grade 4 laryngeal hemiplegia. (Courtesy M. Weishaupt, Zurich.)



Figure 44-3. A videoendoscopic image of the larynx of a horse with grade 4 laryngeal hemiplegia, showing complete collapse of the larynx and vocal folds during high-speed exercise. (Courtesy M. Weishaupt, Zurich.)

Etiology and Incidence of Laryngeal Hemiplegia (Recurrent Laryngeal Neuropathy)

Horses can develop unilateral or bilateral paralysis of the arytenoids. Unilateral left-sided laryngeal paralysis is most commonly encountered (Fig. 44-2) and results from progressive loss of large myelinated nerve fibres in the left recurrent laryngeal nerve, hence the term recurrent laryngeal neuropathy has been suggested as a name for this disease. In almost all of these horses, no precise cause is evident, and the term idiopathic laryngeal hemiplegia is applied, although a genetic predisposition is most likely. Progressive neurogenic atrophy of the intrinsic laryngeal musculature, most importantly the cricoarytenoideus dorsalis muscle, results in progressive loss of both abductor and adductor arytenoid function. Laryngeal hemiplegia occurs in horses from a few months to 10 years of age and older, with large-breed horses more commonly affected than small-breed horses or ponies.

A specific etiology can be identified in some horses with acquired laryngeal paralysis, unilateral or bilateral. The recurrent laryngeal nerve can be damaged as a result of perivascular injection intended for the jugular vein, guttural pouch mycosis, trauma from injuries or surgical procedures of the neck, strangles abscessation of the head and neck, and impingement by neoplasms of the neck or chest. Organophosphate toxicity, plant poisoning, hepatic encephalopathy, lead toxicity, and central nervous system diseases have also been shown to cause laryngeal paralysis.

Etiology and Incidence of Laryngeal Hemiplegia (Recurrent Laryngeal Neuropathy)

Incidence is highest in young horses and commonly discovered in Thoroughbred yearlings that are examined at sale time, before they have started any type of training, or in 2- and 3-year-olds that are racing or are in race training. Although the incidence of complete idiopathic laryngeal hemiplegia was 2.75% in a study of Thoroughbred yearling sales, overall incidence in the entire yearling population is likely to be higher. In fact, in a recent study of 427 Thoroughbred sale yearlings, 64% had asynchronous/asymmetrical arytenoid cartilage movements and 25% had laryngeal asymmetry that was significantly associated with decreased racing performance.

In a normal horse during sustained exercise, the larynx dilates fully to maximize airflow. Complete arytenoid cartilage abduction is sustained, despite the increased negative inspiratory pressure, throughout the respiratory cycle as exercise intensity increases. In the horse with laryngeal hemiplegia, arytenoid abduction on the affected side cannot be achieved and there is a progressive collapse of the arytenoid cartilage and vocal cord into the airway as negative inspiratory pressures increase (Fig. 44-3). This produces airflow limitations that result in hypoxemia, hypercarbia, and metabolic acidosis, which develop more rapidly than in a normal horse with the same workload, causing early fatigue and poor performance.

In a recent study of 375 cases of laryngeal hemiplegia in a mixed-breed population of horses, 94% (351) were idiopathic in origin. However, in non-idiopathic cases (6%), over half were bilaterally affected.

3. Right-Sided Laryngeal Hemiplegia

Right-sided laryngeal hemiplegia is rare in horses, and an etiology should be sought, because the idiopathic form of laryngeal hemiplegia does not usually affect the right side. If none of the aforementioned causes can be detected, the surgeon should suspect congenital malformation of the laryngeal cartilages in young horses.

Palpation of the muscular process of the arytenoid cartilage is an important part of the physical examination. Additionally, endoscopically these horses appear as if the corniculate process of the arytenoid cartilage on the right side is much smaller than on the contralateral side. In a series of horses treated for right-sided laryngeal hemiplegia, 7 of 11 Thoroughbreds had congenital malformation of the laryngeal cartilages. This makes the rate of laryngoplasty failure in this group of horses very high, and partial arytenoidectomy may be selected as a treatment. Although spontaneous recovery from right-sided laryngeal hemiplegia has been reported, it would not be expected to be found in the young yearling to 2-year-old Thoroughbred.

A poor prognosis should be given to the owner, and some consideration should be given to performing a neuromuscular pedicle graft. However, right-sided laryngeal hemiplegic horses have a very guarded prognosis for return to athletic activity.