

What is Dorsal Displacement of the Soft Palate?

Dorsal displacement of the soft palate is a disorder of the upper airway in horses. It is one of the most common upper airway obstructions, and it causes poor performance and abnormal noise while exercising. It's usually a disease of racehorses, for which it is often a performance-limiting problem.

When DDSP occurs, the epiglottis--which normally lies on top of the soft palate--becomes displaced below the soft palate. If this happens when a horse is at racing speed, breathing very fast, then this creates a partial airway obstruction. On expiration (as the horse breathes out), some air goes underneath the now-exposed soft palate and it billows upward (like a sail) just in front of the opening to the trachea and blocks the airway.

Racehorses need maximal oxygen to keep up racing speed, so this decrease in airflow gives them no choice but to put on the brakes. After they slow down, they usually can swallow, allowing the soft palate and epiglottis to go back into their normal anatomical positions and correct the problem themselves. But by that time, the race is over. This scenario is called intermittent DDSP.

Some horses are affected by persistent DDSP--their soft palates are displaced all the time. Swallowing does not correct the problem. Although these horses can breathe normally at rest, they cannot exercise at speed. Many of these horses also have problems swallowing food and/or water correctly (dysphagia).

Since the soft palate and epiglottis also help direct food boluses, when they are not in their normal positions, they cannot protect the opening of the trachea. Therefore, these horses sometimes inhale food and water while eating, leading to coughing, food and water being expelled through the nostrils, and aspiration pneumonia. This is obviously a much more serious condition, as it can be life-threatening.

What Causes DDSP?

There are several suspected causes for DDSP, but there's no one unifying theory. Intermittent DDSP, which occurs during racing, is thought to be caused by a combination of factors, such as laryngeal inflammation (especially in young horses), excessive backward movement of the larynx, and/or opening of the mouth during racing. Other causes include malformations or problems with the epiglottis.

Persistent DDSP is thought to be caused by severe inflammation around the horse's larynx--more specifically, inflammation that involves the nerves that control movement of the soft palate and larynx, such as fungal or bacterial infections of the guttural pouch.

Diagnosis

Intermittent DDSP can be difficult to diagnose because it only occurs when the horse is exercising at strenuous levels. The first step is to have a physical examination performed by a veterinarian to rule out other causes of exercise intolerance. Then, a standing endoscopic examination of the upper airway can be performed to rule out any structural abnormalities of the upper airway. During the examination, many horses will displace their soft palates, then quickly swallow and replace them. This is normal, and it does not prove that DDSP is the reason for poor performance or noise made during exercise.

Persistent DDSP is easily diagnosed with standing endoscopy of the upper airway. In these cases, the epiglottis, which should be readily visible during endoscopy, is hidden underneath the soft palate (see images at left). If the upper airway is normal, then an endoscopic examination can be performed on the horse while he is exercising on a treadmill. Before the advent of high-speed treadmill endoscopy, DDSP was overestimated as a cause of poor performance in racehorses due to a lack of endoscopic findings.

Diagnosis of DDSP

- Static endoscopy at rest can rule out some other causes of airway disease.
- Dynamic endoscopy (with the horse galloping), either on a treadmill or gallops is the only definitive way to diagnose this condition.

Following a diagnosis of DDSP, frequently a number of conservative management strategies are tried in an attempt to manage the condition. These may include:

- tongue straps
- crossed nosebands
- glycerine applied to the back of the tongue.

Cases that are non-responsive to conservative management are candidates for **tie forward surgery**.

