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Update on treatment of soft palate disease

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The treatment of dorsal displacement of the soft palate (DDSP) must be tailored to the cause. The intrinsic causes of DDSP can be neuromuscular, i.e., decreased tone in the palatinus and palatopharyngeus muscle (Holcombe et al., 1998) or structural, i.e., subepiglottic and palatal masses/cysts and severe epiglottic deformation. Extrinsic causes are related to the respective position of the larynx, basihyoid and soft palate (Ducharme et al., 2003; Chalmers et al., 2009). However when no structural anomaly of the larynx is found it is clearly more difficult to identify the cause of the DDSP. The following summarizes the approach taken at the author’s university hospital.

Initial management

Any horse’s guttural pouch infection should be treated first. For example, treatment of guttural pouch infection with a physiological and sterile balanced electrolyte solution accompanied by non-irritant anti-microbial and systemic antibiotics must precede any surgical treatment for DDSP. Horses with nasopharyngeal inflammation are treated with systemic and topical anti-inflammatory agents. Two different anti-inflammatory protocols are used for the average 450kg horse in treatment: 1) dexamethasone (30 mg PO or IV SID for 3 days, 20 mg PO or IV SID for 3 days, 10 mg PO or IV SID for 3 days, and 10 mg PO or IV EOD for 3 treatments) and 2) prednisolone (300 mg PO BID for 2 weeks, 300 mg PO SID for 2 weeks, and 300 mg PO EOD for 2 weeks). The dexamethasone protocol is more potent.

Horses with structural abnormality of the larynx and nasopharynx such as sub-epiglottic cyst, subepiglottic granuloma and ulcers, palatal cyst, epiglottitis and ary-epiglottic entrapment have good reason to experience DDSP. These primary lesions must be addressed first. Cysts, which are mainly congenital malformations, should be excised using a laryngotomy or endoscopically through the oropharynx or nasopharynx with the aid of endoscopic laser. Chronic inflammatory disease, such as granulomas and epiglottitis are more difficult to address. However if there is not a prolonged history of medical treatment, the latter should be done first; the standard treatment for horses with acute or subacute epiglottitis is 10-21 days of antimicrobials (usually trimethoprim-sulfadiazine 15 mg/kg PO, BID or enrofloxacin 7.5mg/kg PO and nonsteroidal anti-inflammatory medications (phenylbutazone 2.2 mg/kg PO, BID for 5-7 days, then SID for 3-5 days). Although controversial, topical nasopharyngeal anti-inflammatory preparations are frequently used in our practice. The preparation we use is a throat spray at 20 cc BID (made up of 250 ml glycerin, 250 ml DMSO 90%, 500 ml nitrofurazone, and 50 ml of dexamethasone (2 mg/ml)), and a steroid inhaler (Beclomethasone) has been used by others (D. Archer, personal conversation Liverpool).

Two-year-old horses with DDSP may have an “immature nasopharynx,” so owners
With that caveat in mind, bit changes, decreasing head flexion, and preventing oral breathing are recommended. The tongue-tie primarily use to keep the tongue from getting over the bit is often used or recommended to reduce the occurrence of DDSP. To date, experimental and treadmill data raise questions about the tongue-tie’s value. The figure-8 noseband is also thought to be an effective device because it prevents the destabilizing effect of oral breathing on the palate. There are many anecdotal reports that the Santa Anita tongue control (Serena’s Song) bit and “W” effectively decrease DDSP incidence during racing. Bitless bridles have been suggested for sport horses. Finally, an external device (i.e., Cornell collar*) that displaces the larynx forward and dorsally effectively controls DDSP in experimentally induced DDSP (Woodie et al., 2005). If the horse responds to the Cornell collar, they are likely to respond to the laryngeal tie-forward procedure.

**Surgical Management**

A horse diagnosed with DDSP after 2 or more races for which the issues described above have been addressed but where no resolution of clinical signs was seen is a candidate for surgical treatment. In sport horses DDSP is far less common and surgical results less predictable unless an intrinsic cause is found.

Aside from surgically addressing masses in the nasopharynx, there are two categories of surgical treatments: 1) those that target intrinsic nasopharyngeal structures (cyst removal) and palatal stiffness (thermal palatoplasty by cautery or laser, chemical palatoplasty by injection of sclerosing agents, and tension palatoplasty) and 2) those targeting the position of the larynx and hyoid bone, such as strap muscle resection and laryngeal tie-forward.

The rationale for the procedure that increases palatal stiffness is being questioned given the results of two recent studies. In one study, using injection of a sclerosing agent in the soft palate failed to reveal evidence of any sustained change in stiffness or morphology of the soft palate at up to 6 months post-injection (Muñoz et al., 2008). In another study (Delfs et al., 2008), fibrosis was induced with a diode laser (15 watts; 1s on-1s off) but the biomechanical property was not changed at 45 days (oral presentation on results of abstract). The primary benefit of soft palate surgery seems related to removal of granulomas, cysts, and abnormal subepiglottic tissues. Increasing stiffness of the soft palate, if it could be done reliably and for a prolonged period of time, would likely reduce the noise. Whether it would reduce the airway obstruction remains to be demonstrated.

Strap muscle resections focus on bilateral partial stenothyroidectomy (with a reported success rate of 58% to 70%) remains the most popular track side treatment of this condition. The laryngeal tie-forward appears to increase the success rate of those procedures by an additional 10-20% while decreasing the recurrence of the condition. The procedure was developed following experimental treadmill studies where bilateral resection of the TH resulted in exercise-induced DDSP that was corrected by moving the larynx rostrally and dorsally. A recent evaluation of the outcome of surgery relating to position of the larynx and hyoid bone after laryngeal tie-forward, established that the laryngeal tie-forward procedure moved the basihyoid bone dorsally and caudally and...
Conflict of interest disclosure. The author and Cornell University both benefit through patent royalties and have equity interest with the company marketing the product.

References


