Temporo-hyoid osteoarthropathy: is it a surgical condition?

Fernando Canonici DVM, Equine Practice srl, Campagnano di Roma (Rome) –Italy

The hyoid apparatus in the horse consists of paired stylohyoid, ceratothyoid and thyrohyoid bones, a single basihyoid bone and a lingual process. This apparatus serves to support the tongue, pharynx and larynx (Blythe and Watrous 1997; Walker et al. 2002). Temporohyoid osteoarthropathy causes ankylosis of the temporohyoid joint, which, in turn places abnormal forces on the petrous temporal bone, with movement of the tongue and larynx (either by swallowing or moving the head) predisposing the petrous temporal bone to fracture (Blythe et al. 1994; Blythe and Watrous 1997; Walker et al. 2002).

Temporohyoid osteoarthropathy (THO) has been reported to cause clinical signs of vestibular disease and/or facial paresis and behavioural changes (Power et al. 1983; Blythe et al. 1984; Blythe and Watrous 1997). Varying causes have been suggested, ranging from extension of otitis media/externa or guttural pouch infection to a nonseptic osteoarthritis (Blythe 1997; Blythe and Watrous 1997; Power et al. 1983; Walker et al. 2002). Regardless of the cause, the end-point of the osteoarthropathy is ankylosis of the temporohyoid joint. When this occurs, the normal forces generated by movement of the tongue and larynx can cause fractures of the petrous temporal bone, resulting in vestibulocochlear and facial nerve dysfunction (Power et al. 1983; Blythe et al. 1984, 1994; Spurlock et al. 1989). The facial (VII) and vestibulocochlear (VIII) nerves are the most commonly affected because of the relationship of these nerves to the petrous temporal bone and internal acoustic meatus. The glossopharyngeal (IX) and vagus (X) nerves leave the medulla caudal to the vestibulocochlear nerve and exit the cranial vault via the jugular foramen (deLahunta 1977); this caudal location is hypothesised as the reason the glossopharyngeal and vagus nerves are affected only with severe bone production and inflammation secondary to temporohyoid osteoarthropathy (Power et al. 1983). Rarely dysphagia can also occur if there is involvement of the glossopharyngeal and vagus nerves (Walker et al. 2002). Fractures of stylohyoid bone is reported to be responsible of broad signs of neurological dysfunction including V, VII, IX and X cranial nerves deficit (Reed S, personal com.). Endoscopy (Walker et al. 2002) and radiography (Power et al. 1983; Blythe and Watrous 1997) have been suggested as the diagnostic modalities of choice for temporohyoid osteoarthropathy. However, CT has also been used to identify and evaluate the hyoid apparatus in the horse (Cornelisse et al. 2001). In horses with ankylosis of the temporohyoid joint, a partial stylohyoidectomy is the previous reported treatment that has been recommended to prevent fracture of the petrous portion of the temporal bone (Blythe et al. 1994). In this procedure, approximately 2–3 cm of the mid-body of the stylohyoid bone is removed, resulting in a pseudoarthrosis that is thought to decrease the forces on the ankylosed temporohyoid articulation (Blythe et al. 1994). Reported complications include transection of the lingual artery or injury to the hypoglossal nerve due to their close apposition to the stylohyoid bone (Blythe et al. 1994). The regrowth of the stylohyoid bone approximately 6 months after surgical resection associated with recurrence of clinical signs is also considered as complication (Pease et al. 2004).

In the presentation two cases of THO are described; the first one is an unusual case of a trotter horse with history of dysphagia, intermittent dorsal displacement of the soft palate and facial nerve deficit, where pathological changes of the stylohyoid bone was diagnosed as probable consequence of a guttural pouch infection. The second case, a Shetland pony, can be related to a typical THO with vestibulocochlear disease and facial nerve paralysis and where a fracture of stylohyoid bone near to the joint was diagnosed. Both horses were surgically treated with unilateral ceratothyoidectomy. The trotter horse has recovered a full function three months after surgery and has successfully resumed the race performance. The Shetland pony hasn’t recovered the neurological deficit.
The ceratohyoidectomy is now considered the treatment of choice to avoid the possible complications encountered with partial stylohyoidectomy and the principle of this procedure was based on the concept that the stylohyoid-ceratohyoid joint is the source of the forces placed on the petrous portion of the temporal bone. Removal of this lever arm is proposed to be similar to the partial stylohyoidectomy by decreasing movement of the temporohyoid joint and thus decreasing the healing time needed for a petrous temporal bone fracture (Pease et al. 2004). Ceratohyoidectomy may potentially provide an easier procedure to accomplish the same goal as the partial stylohyoidectomy, without the risk of regrowth of the ostectomy site, damaging the hypoglossal or facial nerves, or damaging the lingual arteries or veins; this safer procedure can be strongly considered and performed in case of temporohyoid osteoarthropathy even in asymptomatic cases in which “it can saves an eye and/or help prevents pneumonia, which is secondary to the dysphagia” (Reed SM personal com.).

References