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Special Article

Understanding the equine diastema

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A diastema (Greek: an interval; pl.: diastemata) is defined as a space between 2 adjacent teeth in the same dental arcade (Dorland 2000) which, by definition, is a pathological condition. In herbivores, this is not to be confused with the normal gap between the incisors and cheek teeth termed the interdental space or the 'bars of the mouth'.

The equine diastema is rare, with an incidence ranging from 1.09% (Becker 1945), 3.67% (Wafa 1988) to 21.9% (Vlaminck *et al.* 2001). It has been described as one of the most painful, chronic conditions of the oral cavity, which is difficult to treat (Dixon *et al.* 1999).

This may be so; however, it is important to realise that diastemata are the result of a variety of different pathological processes and that, while some are indeed chronic, they are not painful and therefore the type and duration of treatment (if any) needs to be considered carefully.

Diastemata can be congenital or acquired. Congenital cases involving abnormal spacing or absence of adjacent dental buds can lead to gap formation, as can polyodontia or oligodontia. Rotation or incorrect angulation of emerging teeth within an arcade can also result in a similar condition. **Acquired diastemata** may be the result of dental displacements, fractured crowns, tooth loss and iatrogenically by the premature removal of deciduous teeth without an underlying permanent counterpart.

Loss of permanent dentition in horses is a pathological process and yet historical or current literature does not term this, or gaps left by subsequent dental migration (Miles and Grigson 1990a,b), diastemata. In these cases, interruption to the integrity of the occlusal surface of the dental arcade has occurred and, while feed material can be appreciated within the diastema, careful examination of interdental gingiva often reveals it to be healthy and nonpainful.

It is this author's opinion that the differing degrees of oral pain seen in horses with similar diastemata may be associated with variations in the severity of accompanying periodontal disease. As illustrated above, some diastemata, despite trapping feed between adjacent cheek teeth and accounting for the presence of halitosis, do not result in any clinically discernable oral pain or gingival pathology and, therefore, require no more than careful observation. In these cases, the diastemata can be described as 'open', allowing ingress and egress of feed material.

In other cases, careful oral examination of a **cachexic patient** reveals abnormal dental angulation and trapped decaying feed material. Removal of this material under sedation (with or without the need for perineural analgesia) results in signs of extreme discomfort when even light pressure is applied to the underlying gingiva, although the surface may appear to be clinically normal.

I submit that the term **valve (or closed) diastema** be introduced to the literature to define painful spaces between cheek teeth caused by incorrect angulation of these teeth. In this pathological situation, feed material is able to enter the triangular-shaped defect (Hofmeyr 1960), bounded rostrocaudally by tooth, ventrally by gingiva and dorsally by the occlusal surface of the dental arcade. Egress of feed material from this abnormal space is impeded, both by the 'valve' and also, over time, by enlarged transverse ridges on opposing cheek teeth (Becker 1945), and putrefaction occurs. Bacterial degradation of feed material leads to gingivitis, gingival recession, pain and periodontal disease.

By limiting the use of this term specifically to the pathological condition described above, veterinary equine dentists will be furnished with an accurate mental picture of the pathology.

This tighter definition may explain, in part, the observation by Dixon *et al.* (1999) that, "Inexplicably, horses varied greatly in their degree of oral discomfort while having apparently similar clinical degrees of this disorder."

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