Dental Disease in Aged Horses and Its Management

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KEYWORDS

• Dental disease • Geriatric dentistry • Equine

KEY POINTS

- Dental disorders are common in the equine geriatric population.
- Age-related changes in normal equine dentition result in dental disorders.
- Geriatric patients have specific requirements for restraint and sedation.
- A key point is ensuring oral comfort and maximizing masticatory ability.
- Dental treatment in geriatric patients often requires concurrent management changes, such a dietary modification and treatment of coexisting problems, such as pituitary pars intermedia dysfunction (PPID).

INTRODUCTION

There have been many recent articles focused on geriatric equine veterinary care, which have enhanced knowledge of age-related dental disease and how to tailor specific care toward this significant and potentially increasing proportion of the equine population.[1–5] From recent studies, it is known that horses[5] and donkeys[6] have an increased prevalence of dental disorders, in particular periodontal disease, from 15 years of age. Furthermore, donkeys older than 20 years of age are known to have an increased prevalence of wear abnormalities, cheek tooth displacements and diastemata, and loss of teeth (**Fig. 1**), along with other dental abnormalities, such as shear mouth and smooth mouth.[7] Because dental abnormalities have been documented as present in 95.4% of geriatric animals,[4] there is absolute justification for early intervention and preventive care in the equid population, in addition to the unequivocal requirement for routine dental care for the older geriatric proportion. So why is the geriatric population over-represented in terms of dental disorders?

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Fig. 1. A geriatric cadaver skull showing multiple missing maxillary cheek teeth.

ANATOMIC CHANGES WITH AGING

Normal age-related changes in equine dentition are a major contributing factor to geriatric dental disorders due to their hypsodont nature, which translates into a finite length of tooth for eruption. Various factors, such as dietary management and excessive dental treatment, may also decrease the functional length of the tooth and exacerbate normal age-related changes.[8]

Equid teeth have a normal taper from the occlusal surface to the apex, and the cheek teeth are tightly packed together as a single grinding unit by the opposing angulation of the 06s, 10s, and 11s. As the horse ages and the teeth erupt, they become smaller on cross-section, with the incisors beginning as oval-shaped after eruption, becoming triangular thereafter, and finally becoming oval-shaped as the horse matures. Eventually the tapering predisposes the horse to development of senile diastemata between both the incisors and the cheek teeth, with secondary food impaction and periodontal disease.[9]

All teeth have the presence of enamel, dentine, and cementum on their occlusal surface, and exposure of all 3 is essential for efficient mastication. The differential wear in these structures allows the formation of enamel ridges and acts as a self-sharpening mechanism. The maxillary cheek teeth have 2 separate infundibulae (enamel cups) (**Fig. 2**) in the center of the tooth, and the mandibular cheek teeth have pronounced infolding of the peripheral enamel to increase the grinding area of the tooth. As the tooth matures, the infundibulae wear out and the enamel infolding becomes less prominent, leading to only a thin shell of peripheral enamel left around the tooth (cupped-out tooth) (see **Fig. 2**). Eventually the peripheral enamel wears away at the junction of the individual roots, leaving a smooth occlusal surface (smooth mouth), which is inefficient at mastication, has no wear resistance, and may be quickly worn away.

In a further exacerbation of problems for geriatric patients, there is also an age-related change in occlusal contact. Biomechanical studies have demonstrated that the equine mandibular cheek teeth become more curved rostrocaudally but did not change their dental position in the mouth with aging. This is in contrast to the maxillary cheek teeth, which changed only their mesio-occlusal angle (ie, their dental position) but did not become more curved rostrocaudally. This effectively means that the occlusal contact between the cheek teeth changes with aging and may contribute to the wear pattern disorders commonly seen in geriatric dental patients, such as wave mouth and senile diastemata.