

# Dental and oral cavity alterations in Quarter Horses of Vaquejada: retrospective study of 416 cases (2012–2022)

Alterações odontológicas e da cavidade oral de equinos Quarto de Milha de Vaquejada: estudo retrospectivo de 416 casos (2012–2022)

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## Abstract

Oral and dental diseases are common in horses, as evidenced by the results of incidence studies of dental diseases carried out on abattoir specimens or sports horses. Thus, periodic dental examinations in horses are essential to ensure the maintenance of dental health and proper use of ingested food. A retrospective study of the dental records of 416 Quarter Horses (256 males, 160 females), distributed in the western region of the Rio Grande do Norte, Brazil, was conducted. Horses were examined between July 2012 and August 2022. The variables collected were age, sex, type of diet, dental alterations identified, and history of colic in the last 365 days. The animals were divided into three groups according to age: group I (2 to 6 years old), group II (7 to 12 years old), and group III (13 to 24 years old). Pairwise comparisons were performed using Tukey's correction. The most frequent dental alterations were excessive tip of the tooth enamel, limited/asymmetric lateral excussion, oral ulceration, eruption of the first premolar tooth, and rostral hook. Statistical differences ( $p < 0.05$ ) were observed between the age groups in the following alterations: excessive tip of the tooth enamel, limited/asymmetric lateral excussion, eruption of the first premolar tooth, rostral hook, palatitis, step, caudal hook, retention of deciduous cheek teeth, wave, tartarus, underbite, periodontal disease, and incisors of the dorsal curve. Dental disorders in horses are of major clinical importance.

**Keywords:** dental disease, equine dentistry, vaquejada.

## Resumo

Doenças orais e dentárias são comuns em cavalos, como evidenciado pelos resultados de estudos de incidência de doenças dentárias realizados em espécimes de matadouro ou cavalos de esporte. Assim, exames odontológicos periódicos em equinos são essenciais para garantir a manutenção da saúde bucal e o uso adequado dos alimentos ingeridos. Foi realizado um estudo retrospectivo dos prontuários odontológicos de 416 equinos da raça Quarto de Milha (256 machos, 160 fêmeas), distribuídos na região oeste do estado do Rio Grande do Norte, Brasil. Os cavalos foram examinados entre julho de 2012 e agosto de 2022. As variáveis coletadas foram idade, sexo, tipo de dieta, alterações dentárias identificadas e histórico de cólica nos últimos 365 dias. Os animais foram divididos em três grupos de acordo com a idade: grupo I (2 a 6 anos), grupo II (7 a 12 anos) e grupo III (13 a 24 anos). As comparações pareadas foram realizadas usando a correção de Tukey. As alterações dentárias mais frequentes foram ponta excessiva do esmalte dentário, excussão lateral limitada/assimétrica, ulceração oral, erupção do primeiro dente pré-molar e gancho rostral. Foram observadas diferenças estatísticas ( $p < 0,05$ ) entre as faixas etárias quanto às seguintes alterações: ponta excessiva do esmalte dentário, excussão lateral limitada/assimétrica, erupção do primeiro dente pré-molar, gancho rostral, palatite, degrau, gancho caudal, retenção de dentes decíduo, onda, tártaro, sobre-mordida, doença periodontal e incisivos em curvatura dorsal.

**Palavras-chave:** doenças dentárias, odontologia, vaquejada.




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## Introduction

Horses are monogastric herbivores that are physiologically adapted to digest large amounts of high-fiber forages; Under natural conditions, daily feeding intake on pasture lasts 12–18 h, with a duration of 2 to 3 h for each meal, separated by short breaks for digestion, locomotion, and other social activities (Maia et al., 2018; Melo et al., 2021).

During the evolution of equine species, the molarization of premolars and development of occlusal ridges with highly crowned cheek teeth transformed the horse into a large hypsodont grazer. An important change occurred in the presence of enamel, dentin, and cementum on the occlusal surfaces of the hypsodont teeth, providing them the ability to graze for longer periods without significant loss of dental material, together with dental eruption at levels similar to the wear caused by pasture friction (Dietrich et al., 2022).

The change in eating habits of performance horses due to the introduction of concentrates, restricted access to long fibers, and reduced chewing time facilitates the development of dental abnormalities (Berbari Neto et al., 2013; Paiva Neto et al., 2018). Dental disease is the main oral disorder in horses and is of major importance in equine veterinary practice, with up to 10% of practice time involving dental-related work (Dixon & Dacre, 2005). Most equine practitioners consider oral examination as simply parting the lips, casually looking at the incisors, and placing a finger in the cheek to feel for points on the first few upper cheek teeth. Only a small percentage of equine dental diseases are detected by this type of examination. Therefore, periodic dental examination in horses is essential to ensure the maintenance of dental health and proper use of ingested food (Lima et al., 2011).

Several studies conducted in Brazil have shown a high prevalence of dental alterations in horses of different breeds and regions (Berbari Neto et al., 2013; Leite et al., 2019; Rizzo et al., 2011; Silva et al., 2016;).

This study aimed to conduct a retrospective study of dental alterations in Quarter Horses used in the vaquejada modality in the western region of Rio Grande do Norte state, Brazil.

## Material and methods

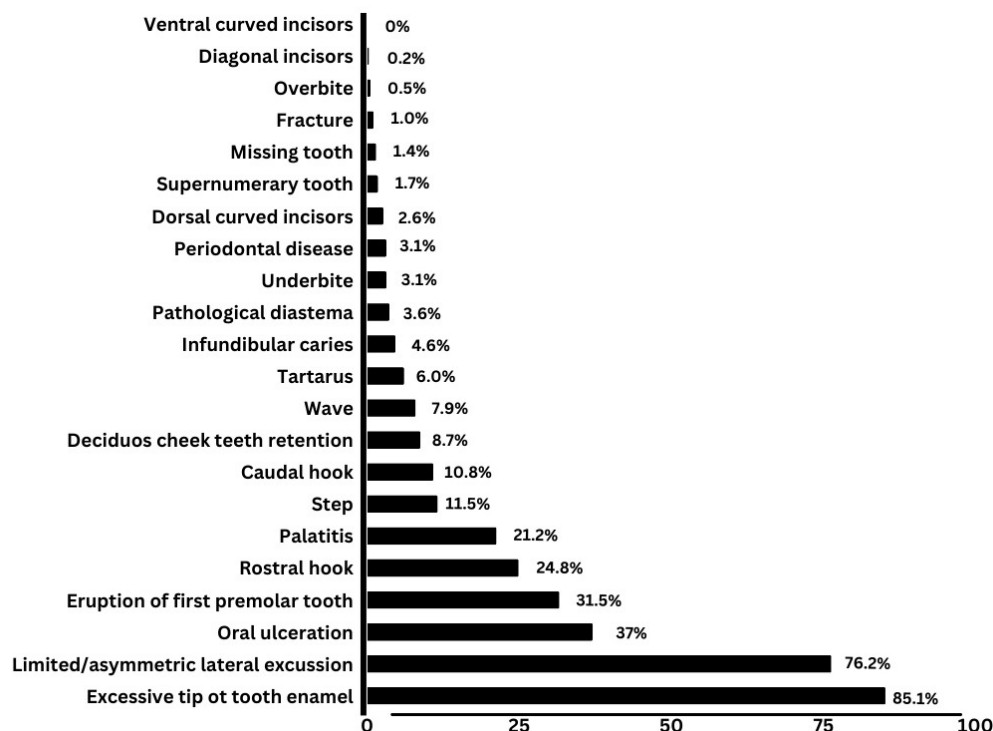
A retrospective study of the dental records of 416 Quarter Horses (256 males and 160 females), distributed in the western region of the state of Rio Grande do Norte, Brazil. Horses were examined between July 2012 and August 2022. The dentition of all animals was carefully examined by a veterinarian specializing in equine internal medicine after sedation with 10 µg/kg detomidine IV using a full-mouth speculum, bright light source, and dental mirror. The Triadan system was used to identify each dental element (Dixon & Dacre, 2005).

Records with a history of dental intervention in the last 365 days or individuals with no known history were excluded from the study. The collected variables were age, sex, type of diet, identified dental alterations, history of colic in the last 365 days. The declared age of the animals was determined by dental chronology, and confirmed by consulting the animal registry on the website of the Brazilian Association of Quarter Horse Breeders (ABQM). All data were tabulated using an Excel® spreadsheet.

For statistical analysis, the animals were divided into three groups according to age: group I (2 to 6 years), group II (7 to 12 years), and group III (13 to 24 years). To test the differences in the frequency of dental changes between different age groups as well as between the sexes, generalized linear models were fitted with a binomial distribution. After adjusting for the models, the mean prevalence and 95% confidence intervals were calculated for each group (age and sex). Pairwise comparisons were performed using Tukey's correction. Statistical significance was set at  $P < 0.05$ . To quantify the association between dental changes and between dental changes versus history of colic, Kendall's non-parametric correlation was calculated, and only significant correlations were considered. Kendall's correlation was classified according to the following criteria (Landis & Koch, 1977): Poor agreement (Less than 0.20), Fair agreement (0.21 to 0.40), Moderate agreement (0.41 to 0.60), Good agreement (0.61 to 0.80), and Very good agreement (0.81 to 1.00). All statistical analyses were performed using R programme (version 3.6.1).

## Results

This retrospective study included 416 Quarter Horses aged 2 to 22 years (260 males and 156 females). Regarding the type of feeding management, 44.47% (185/416) were fed a diet based on in natura roughage and concentrated ration, while 55.53% were fed hay and concentrate rations. The most frequent dental alterations in the population studied were excessive tip of the tooth enamel, limited/asymmetric lateral excussion, oral ulceration, eruption of the first premolar tooth, and rostral hook (Figure 1).



**Figure 1.** Main alterations of the oral or dental cavity identified in Quarter Horses of Vaquejada in the western region of Rio Grande do Norte, Brazil, during 2002–2022.

Regarding the prevalence of each identified dental alteration, statistical differences ( $p < 0.05$ ) were observed between the age groups with respect to the following alterations: excessive tip of the tooth enamel, limited/asymmetric lateral excussion, eruption of the first premolar tooth, rostral hook, palatitis, step, caudal hook, deciduous tooth retention (“caps”), wave, tartarus, underbite, periodontal disease, and dorsal curve incisors (Table 1).

Regarding sex (Table 2), differences ( $p > 0.05$ ) were observed only in the prevalence of steps (male > female) and missing teeth (female > male).

Colic episodes in the last 365 days were reported in only 16.8% of the population studied. However, no differences ( $p > 0.05$ ) were observed in relation to the groups or sexes. Although significant ( $p < 0.05$ ), there was a low correlation between colic episodes and pathological diastema, underbite, deciduous tooth retention (“caps”), excessive tip of tooth enamel, overbite, oral ulceration, supernumerary tooth, and step. The other changes identified in this retrospective study did not correlate with episodes of colic in the study population (Table 3). A strong and significant correlation was identified between an excessive tip of tooth enamel and a limited / asymmetric lateral excussion (Table 4).

**Table 1.** Effect of sex on the prevalence of dental or oral cavity alterations in Quarter Horses of Vaquejada in the western region of the state of Rio Grande do Norte during the period from 2012 to 2022.

| Dental Changes                           | Groups           |                  |                   |
|--|------------------|------------------|-------------------|
|  | I (n=173)        | II (n=187)       | III (n=56)        |
| Excessive tip of tooth enamel            | 75% <sup>A</sup> | 90% <sup>B</sup> | 100% <sup>B</sup> |
| Limited/asymmetric lateral excussion     | 65% <sup>A</sup> | 81% <sup>B</sup> | 95% <sup>B</sup>  |
| Oral ulceration                          | 35% <sup>A</sup> | 37% <sup>A</sup> | 43% <sup>A</sup>  |
| Eruption of first premolar tooth         | 56% <sup>A</sup> | 18% <sup>B</sup> | 0% <sup>B</sup>   |
| Rostral Hook                             | 18% <sup>A</sup> | 20% <sup>A</sup> | 61% <sup>B</sup>  |
| Palatitis                                | 46% <sup>A</sup> | 4% <sup>B</sup>  | 4% <sup>B</sup>   |
| Step                                     | 8% <sup>A</sup>  | 10% <sup>A</sup> | 30% <sup>B</sup>  |
| Caudal Hook                              | 3% <sup>A</sup>  | 11% <sup>B</sup> | 36% <sup>C</sup>  |
| Deciduous cheek teeth retention ("caps") | 21% <sup>A</sup> | 0% <sup>B</sup>  | 0% <sup>B</sup>   |
| Wave                                     | 3% <sup>A</sup>  | 7% <sup>A</sup>  | 23% <sup>B</sup>  |
| Tartarus                                 | 2% <sup>A</sup>  | 7% <sup>AB</sup> | 13% <sup>B</sup>  |
| Infundibular caries                      | 4% <sup>A</sup>  | 5% <sup>A</sup>  | 4% <sup>A</sup>   |
| Pathological diastema                    | 5% <sup>A</sup>  | 4% <sup>A</sup>  | 0% <sup>A</sup>   |
| Underbite                                | 3% <sup>AB</sup> | 1% <sup>A</sup>  | 9% <sup>B</sup>   |
| Periodontal disease                      | 1% <sup>A</sup>  | 2% <sup>A</sup>  | 13% <sup>B</sup>  |
| Dorsal curve incisors                    | 1% <sup>A</sup>  | 2% <sup>A</sup>  | 9% <sup>B</sup>   |
| Supernumerary tooth                      | 3% <sup>A</sup>  | 1% <sup>A</sup>  | 0% <sup>A</sup>   |
| Missing tooth                            | 1% <sup>A</sup>  | 2% <sup>A</sup>  | 2% <sup>A</sup>   |
| Fracture                                 | 1% <sup>A</sup>  | 2% <sup>A</sup>  | 0% <sup>A</sup>   |
| Overbite                                 | 0% <sup>A</sup>  | 1% <sup>A</sup>  | 0% <sup>A</sup>   |
| Diagonal incisors                        | 0% <sup>A</sup>  | 0% <sup>A</sup>  | 2% <sup>A</sup>   |
| Ventral curved incisors                  | 0% <sup>A</sup>  | 0% <sup>A</sup>  | 0% <sup>A</sup>   |

Means followed by different letters in row differ ( $p < 0.05$  – Tukey's test).

**Table 2.** Effect of sex on the prevalence of dental or oral cavity alterations in Quarter Horses of Vaquejada in the western region of Rio Grande do Norte state during the period from 2012 to 2022.

| Dental Changes                           | Sex              |                  |
|--|------------------|------------------|
|  | Male (n=256)     | Female (n=160)   |
| Excessive tip of tooth enamel            | 85% <sup>A</sup> | 86% <sup>A</sup> |
| Limited/asymmetric lateral excussion     | 77% <sup>A</sup> | 74% <sup>A</sup> |
| Oral ulceration                          | 35% <sup>A</sup> | 41% <sup>A</sup> |
| Eruption of first premolar tooth         | 33% <sup>A</sup> | 29% <sup>A</sup> |
| Rostral Hook                             | 27% <sup>A</sup> | 22% <sup>A</sup> |
| Palatitis                                | 24% <sup>A</sup> | 17% <sup>A</sup> |
| Step                                     | 15% <sup>A</sup> | 6% <sup>B</sup>  |
| Caudal hook                              | 13% <sup>A</sup> | 7% <sup>A</sup>  |
| Deciduous cheek teeth retention ("caps") | 9% <sup>A</sup>  | 8% <sup>A</sup>  |
| Wave                                     | 7% <sup>A</sup>  | 9% <sup>A</sup>  |
| Tartarus                                 | 5% <sup>A</sup>  | 7% <sup>A</sup>  |
| Infundibular caries                      | 4% <sup>A</sup>  | 6% <sup>A</sup>  |
| Pathological diastema                    | 2% <sup>A</sup>  | 6% <sup>A</sup>  |
| Underbite                                | 2% <sup>A</sup>  | 4% <sup>A</sup>  |
| Periodontal disease                      | 4% <sup>A</sup>  | 3% <sup>A</sup>  |
| Dorsal curve incisors                    | 2% <sup>A</sup>  | 4% <sup>A</sup>  |
| Supernumerary tooth                      | 1% <sup>A</sup>  | 3% <sup>A</sup>  |
| Missing tooth                            | 0% <sup>A</sup>  | 3% <sup>B</sup>  |
| Fracture                                 | 0% <sup>A</sup>  | 2% <sup>A</sup>  |
| Overbite                                 | 1% <sup>A</sup>  | 0% <sup>A</sup>  |
| Diagonal incisors                        | 0% <sup>A</sup>  | 1% <sup>A</sup>  |
| Ventral curved incisors                  | 0% <sup>A</sup>  | 0% <sup>A</sup>  |

Means followed by different letters in row differ ( $p < 0.05$  – Tukey's test).

**Table 3.** Kendall's correlation coefficient ( $\tau$ ) between oral cavity or dental alterations and history of colic in Quarter Horses of Vaquejada in the western region of Rio Grande do Norte state during the period from 2012 to 2022.

| Dental change                            | Correlation ( $\tau$ ) | p Value |
|--|------------------------|---------|
| Pathological diastema                    | 0.26                   | < 0.001 |
| Underbite                                | 0.25                   | < 0.001 |
| Deciduous cheek teeth retention ("caps") | 0.23                   | < 0.001 |
| Excessive tip of tooth enamel            | 0.15                   | 0.002   |
| overbite                                 | 0.15                   | 0.002   |
| Oral ulceration                          | 0.15                   | 0.003   |
| Supernumerary tooth                      | 0.14                   | 0.004   |
| Step                                     | 0.12                   | 0.015   |

**Table 4.** Kendall's correlation coefficient ( $\tau$ ) between oral cavity or dental alterations in Quarter Horses of Vaquejada in the western region of Rio Grande do Norte state during the period from 2012 to 2022.

| Change 1                  |   | Change 2        | Correlation ( $\tau$ ) | p Value |
|---------------------------|---|-----------------|------------------------|---------|
| ETTE                      | X | LALE            | 0.73                   | < 0.001 |
| Pathological diastema     | X | Underbite       | 0.48                   | < 0.001 |
| Caudal hook               | X | Rostral hook    | 0.45                   | < 0.001 |
| EFPT                      | X | Palatitis       | 0.42                   | < 0.001 |
| Pathological diastema     | X | Wave            | 0.37                   | < 0.001 |
| EFPT                      | X | DTR             | 0.36                   | < 0.001 |
| ETTE                      | X | Oral ulceration | 0.32                   | < 0.001 |
| Deciduous tooth retention | X | Palatitis       | 0.26                   | < 0.001 |
| LALE                      | X | Oral ulceration | 0.26                   | < 0.001 |

Abbreviation: ETTT: Excessive tip of tooth enamel; LALE: Limited/asymmetric lateral excusion; EFPT: Eruption of first premolar tooth; DTR: Deciduous cheek teeth retention ("caps").

## Discussion

In this study, the most common dental change was excessive tips of tooth enamel (85.1%). This finding corroborates the results of several previous studies that determined in adult horses that the main alterations found in the dental examination were excessive tooth enamel tips in 83%–96% of the animals evaluated (Berbari Neto et al., 2013; Marino et al., 2019; Rizzo et al., 2011). They appear on the buccal surfaces of the premolar teeth and molars of the maxilla, and on the lingual face of the premolar teeth and mandibular molars. When neglected, the ends increase, causing difficulty in chewing and ulceration of the tongue, cheeks, and gums (Pagliosa et al., 2006; Silva et al., 2016).

However, it should be noted that practically every normal horse, at some point in its life, forms excessive tooth enamel tips. Because the mandible is narrower than the maxilla (anisognathia), the buccal margin of the maxillary teeth is more commonly affected; therefore, mouth ulcers are more common. Although 85.1% of the study population had an excessive tip of tooth enamel, oral ulceration was observed in only 37%, which corresponds to a low correlation ( $r = 0.32$ ;  $P < 0.001$ ).

Eruption of the first premolar (wolf teeth) was observed in 31.5% of the population studied, and was more frequent in group I animals than in the other groups ( $P < 0.001$ ). These results are lower than those reported in a population of Crioulo horses (Leite et al., 2019), but higher than those observed in a population of Quarter Horses in the northwest of Paraná State (Ribeiro et al., 2013). The main reason for the low incidence of wolf teeth in groups II and III animals is the spontaneous loss of these teeth during the eruption of the second premolar or its extraction prior to the clinical examination of the animals. Equine trainers commonly requested to extract this tooth at the beginning of the training process of young horses because when this occurs, it is often associated with problems adapting to the bit (Ribeiro et al., 2013).

There is no sexual dimorphism associated with the eruption of the first premolar tooth, and it can be found in both males and females with or without the same frequency (Ribeiro et al., 2013), as observed in this study.

Rostral and caudal hooks were the other pathological alterations commonly observed in the studied population. However, the results were lower than those observed in a study with police horses (Lima et al., 2011) and superior to those reported in a study conducted with slaughterhouse horses (Berbari Neto et al., 2013) or draft horses (Silva et al., 2016).

A dental hook is formed by the lack of wear in the rostral or caudal area of the teeth, resulting in incomplete occlusal contact (Pagliosa et al., 2006). The occurrence of hooks may be related to confinement, because in this management, food is made available above ground level, different from the natural habit of ingesting food in horses. The height at which food is offered can progressively impair rostrocaudal masticatory movements (Lima et al., 2011). In addition, foods based on concentrated rations stimulate vertical movement, which also alters the way in which teeth wear (Pagliosa et al., 2006).

It is important to emphasize that all animals included in this retrospective study were athlete animals confined most of the day in stalls, with restricted access to paddocks during the night period. This corroborates the results of a cross-sectional study that observed that 53.6% of the horses used in vaquejada were raised in a semi-intensive regime with access to pickets, remaining in the bay for more than 11 h/day (Dias et al., 2013). It is a common habit in this population to supply roughage in baskets kept at height at the level of the withers, and the concentrate supplied in troughs kept at the level of the pectoral region, predisposing to alteration of masticatory movements and consequent development of dental pathologies.

Palatitis (hard palate edema) was identified in only 21.2% of the population studied and was more prevalent in group I than in the other groups ( $P < 0.05$ ). The results obtained here are lower than those observed in a study of slaughterhouse horses (Berbari Neto et al., 2013) but higher than those reported in a study of 520 horses kept in an extensive system in central Brazil (Silva et al., 2006).

Palatitis is clinically characterized by swelling of the hard palate mucosa, exceeding the limits of the occlusal margin of the upper incisors (Berbari Neto et al., 2013; Silva et al., 2006). The disease can be acute or chronic, and mild and constant trauma plays an important role in its etiopathogenesis (Silva et al., 2006). The higher prevalence of palatitis in the younger age group (horses aged 2–6 years) is possibly due to the physiological response to tooth eruption of the permanent incisors. However, palate mucosa edema can also be caused by the development of other dental diseases, such as wear changes, which would initially form edema in the buccal mucosa, and by gravity, palate edema (Berbari Neto et al., 2013).

The literature points out that elderly animals, carriers of stereotypes such as aerophagia, inhabitants of regions with sandy soils, or those raised under extensive management are more predisposed to wear of the incisors and leveling of the dental table, and symptoms similar to those observed in palatitis may occur (Silva et al., 2006). Interestingly, two studies carried out in two populations of horses kept in an extensive regimen observed a higher prevalence of palatitis in older age groups of horses (Leite et al., 2019; Silva et al., 2006). Data obtained from dental records did not allow us to identify these predisposing factors; however, there are anecdotal and scientific reports regarding the ingestion of sand by horses from this region (Melo & Ferreira, 2021).

Another factor to be considered in the etiopathogenesis of palatitis is the supply of abrasive food, resulting in mild and constant trauma. The supply of abrasive foods, such as poor quality hay, prickly and sharp forages, or whole corn grains gradually damages the hard palate, causing it to swell and predisposing it to palatitis (Silva et al., 2006). As previously mentioned, the population in this study was fed concentrate (commercial or manufactured by the owner) in addition to hay or forage in natura. As described in a cross-sectional study with a population of horses in the same region, the main type of forage provided was *Brachiaria* spp. (Dias et al., 2013), a type of forage associated with the development of palatitis in horses (Silva et al., 2006).

Steps were observed in 11.5% of the study population and may have been caused by tooth loss, fractures, or defective eruptions. Such an overgrowth may result in bizarre occlusal patterns (Dias et al., 2020). It was more frequent in older horses, consistent with other studies (Leite et al., 2019).

Abnormal retention of the remnants of deciduous cheek teeth (“caps”) can occur in horses aged 2–4.5 years (Dixon & Dacre, 2005), corroborating the results observed in this study. These deciduous teeth are normally shed at age 2.5, 3, and 4 years and are replaced by the

respective permanent teeth, but there can be considerable individual variation in the timing of deciduous cheek tooth shedding (Dixon & Dacre, 2005).

Only 6% of the animals in this study had tartarus (dental calculus), in contrast to the 24.1% observed in another equine population (Berbari Neto et al., 2013). In horses, calculus accumulation on the canines and incisors is common, especially in the lower canines. The calculus comes into contact with the gums and soft tissue and may provoke inflammation and ulcer formation in the cheeks. Tartarus (sometimes extensive) was found on canine teeth in all cases (data not presented), but despite being associated with superficial periodontal disease in some cases, it appeared to be clinically insignificant in this study, corroborating data from a survey of dental alterations conducted in the United Kingdom (Dixon et al., 1999).

Although periodontal disease is considered a common condition in horses and other domestic species (Dias et al., 2020; Pinto et al., 2020), this pathology was identified in only 3.1% of the population studied. Periodontal disease is divided into four stages that must be characterized clinically and/or radiographically during routine dental evaluation: (1) gingivitis, (2) initial periodontitis, (3) moderate periodontitis, and (4) advanced periodontitis (Carvalho et al., 2019); despite the importance of characterizing the severity of periodontal disease, the data obtained from dental records did not allow characterization of the severity of each particular case. Periodontal disease may progress to gingivitis along with subgingival plaque, chronic periodontitis after gingival sequestration and alveolar bone loss, or even tooth loss (Yurdakul et al., 2018).

Although the literature suggests that supernumerary teeth rarely occur in horses (Araripe et al., 2013; Dixon & Dacre, 2005;) this pathological change was observed in 1.7% of the population studied. Supernumerary teeth occurred exclusively in the incisors. Supernumerary teeth may not erupt until horses are over 5 years old (Dixon & Dacre, 2005), which can make them difficult to identify during dental examinations in young animals. However, in this study, such alterations were identified only in animals of the lower age group (group I).

The present study demonstrated a low correlation between dental alterations and a history of colic. Although frequency of dental care does not appear to be associated with the highest incidence of colic (Gunnarsdottir et al., 2014), dental pathology is believed to predispose horses to certain forms of colic, such as large colon impaction (Di Filippo et al., 2018; Ferreira et al., 2009). The results obtained here should be interpreted with caution, since studies carried out in other countries (Bowden et al., 2020) and in Brazil (Costa et al., 2022) have shown that horse owners fail to recognize clinical signs of colic, mainly those associated with mild clinical conditions.

## Conclusion

Dental disorders in horses are of major clinical importance. Variations in the age, breed, and use of equine populations in different areas may also influence the incidence of dental changes. The evaluation of the oral cavity of horses is essential for the maintenance of oral health, as it allows the diagnosis of oral diseases and the monitoring of the therapeutic efficacy of established treatments. Client education on the need for regular prophylactic dental treatment in horses, even in fully asymptomatic horses, is imperative. Many dental disorders seen in this study require regular treatment to prevent or slow down the progression of the disease. In some cases, specific dental disorders such as pathological diastema cannot be resolved definitely and may predispose to other dental diseases. It is important to inform horses owners that regular dental treatment and dietary management will be required to manage these complex disorders in the long term. It is probable that other equine populations which are comprised of different age groups, differing breed or having differing work uses and management, could suffer a different range and incidence of dental disorders than those recorded this study.

## Ethics statement

All procediments were consented by the animal owner (for case reports).

## Financial support

None.

## Conflict of interests

None.

## Authors' contributions

UPM and CF - Development of methodology; preparation and writing the initial draft. CF - Review and Editing manuscript. UPM - Writing, Review and Editing manuscript.

## Availability of complementary results

None.

The study was carried out at several vaquejada training centers in the state of Rio Grande do Norte, Brazil.

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