



## DENTAL DISEASE AND PERIODONTITIS IN A GUINEA PIG (*CAVIA PORCELLUS*)

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### Abstract

A 6-year-old intact male guinea pig was referred with a 5-day history of reduced food intake and weight loss. Incisor teeth were clipped with nail clippers at another veterinary clinic 4 days earlier. Owing to a poor prognosis and the health status of the animal, the owner elected for euthanasia. Based on the postmortem results of the oral cavity examination, micro-computed tomography analysis, bacteriology, and histopathology, iatrogenic incisor malocclusion, incisor enamel fractures, dental disease, hepatic lipidosis, chronic purulent gingivitis/periodontitis caused by *Fusobacterium nucleatum* and *Prevotella buccae*, and dental caries were determined to be the final, postmortem diagnoses. Patients with acquired dental disease should be screened carefully for periodontitis, as periodontal disease is progressive in nature and early detection, diagnosis, and treatment are essential. Copyright 2016 Elsevier Inc. All rights reserved.

**Key words:** guinea pig; dental disease; dentistry; periodontitis; cheek teeth; computed tomography

**D**iseases of the oral cavity are common health disorders in small herbivorous mammals. In rabbits (*Oryctolagus cuniculus*), guinea pigs (*Cavia porcellus*), chinchillas (*Chinchilla lanigera*), and degus (*Octodon degus*), many local and systemic conditions that affect the oral cavity have been described, including hereditary, infectious, metabolic, nutritional, and traumatic conditions, electrocution, and neoplasms.<sup>1,2</sup> Of these, acquired incisor and cheek teeth dental disease associated with metabolic or nutritional disturbances are the most commonly described pathologies in animals that are presented to veterinary hospitals with abnormal conditions affecting the oral cavity.<sup>3,4</sup>

This case report describes a case of periodontitis associated with dental disease and iatrogenic incisor malocclusion in a domestic guinea pig confirmed by micro-computed tomography (micro-CT) and histopathology. Diagnosis of periodontitis in this case was based on postmortem examination; however, a clear understanding of this condition can affect diagnosis and management in living pet and laboratory guinea pigs.

### CASE REPORT

A 6-year-old, 730-g intact male crossbred Abyssinian guinea pig was referred to the clinic with a 5-day history of minimal food intake and progressive weight loss. The patient had been seen 4 days prior at another veterinary clinic for reduced food intake of 1 day's duration. Treatment consisted of cutting the incisors with nail clippers. The patient's condition continued to deteriorate for the

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next 4 days after the treatment. The animal was kept as a single pet animal and was fed with commercial grain mixture (GE, Phoenix, AZ USA), meadow hay, and dry fruits. Vitamin C in the form of crushed tablets was supplemented 15 mg/kg orally, every 3 days (Celaskon 100 mg; Zentiva, Czech Republic).

At the time of initial examination, the guinea pig was in poor body condition (body condition score 2/5). Apathy, sternal recumbency, tachypnea, poor skin elasticity, and dull coat were clinical disease signs observed to be affecting the patient. Abdominal palpation revealed reduced intestinal contents with the presence of gas. The occlusal surface of the incisors was uneven, and horizontal enamel fractures were detected. The space between the occlusal surface of maxillary and mandibular incisors was more than 1 cm, even when the cheek teeth were in contact (Fig. 1). Examination of the oral cavity using a pediatric laryngoscope and oral cavity endoscope revealed clinical crown elongations of all cheek teeth and uneven occlusal surface of all cheek teeth.<sup>5</sup> The first 2 mandibular cheek teeth were mesially (rostrally) elongated. A considerable amount of hair, together with remnants of food debris, were found in the periodontal *sulcus* of the lingual and labial surfaces of the maxillary and mandibular cheek teeth (Fig. 2). No other abnormalities were detected. Owing to poor prognosis, the owner declined further diagnostics and elected euthanasia.

Postmortem examination revealed that the gingiva surrounding all cheek teeth was slightly swollen. The dentogingival space surrounding all cheek teeth was widened, and dentogingival *sulcus* was impacted with food debris and hair (Fig. 3). All the cheek teeth were elongated coronally and apically. Histopathology of lungs, heart, liver, spleen, adrenal glands, urinary bladder wall, and kidneys confirmed the presence of lung hyperemia, mild diffuse hepatic vacuolar dystrophy, mild vacuolar dystrophy of tubular epithelial cells, and extramedullary hematopoietic nodules in the spleen. Samples collected from the gingival *sulcus* were submitted for aerobic and anaerobic microbial culture and revealed the presence of *Fusobacterium nucleatum* and *Prevotella buccae*.

The guinea pig mandible was submitted for further evaluation by x-ray micro-CT analysis using the laboratory system GE phoenix vltomelx L 240 (GE, Phoenix, AZ USA), equipped with a 240 kV/320 W maximum power microfocal x-ray tube and high-contrast flat panel detector DXR250 (GE, Phoenix, AZ USA) with 2048 × 2048 pixels and 200 × 200 μm pixel size. Micro-CT examination showed marked widening of periodontal spaces and partial superficial tooth substance lysis on the lingual and occlusal side of all cheek teeth. Obvious vertical and slight horizontal alveolar bone loss was also visible (Figs. 4 and 5).

Histopathological examination of the dentogingival and dentoalveolar areas of the cheek teeth showed



**FIGURE 1.** Iatrogenic malocclusion of the incisor teeth of a guinea pig presenting for decreased appetite. The gap between the maxillary and mandibular incisors is evident. Rostral (A) and lateral (B) view.

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