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Comparative CT Features of Dental Disease-Associated Lesions in 48 Rabbits and 52 Guinea Pigs

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ABSTRACT

Among rabbits and guinea pigs, dental problems are the most common reason for performing cranial computed tomography (CT). This investigation reviewed CT scans of both species to determine the nature and frequency of lesions arising from dental disorders. Head CT data from 48 rabbits and 52 guinea pigs diagnosed with dental abnormalities were retrospectively examined. Pathologies involving mandibular teeth predominated, seen in 81.2% of rabbits and 98% of guinea pigs. In rabbits, aggressive osseous reactions adjacent to affected teeth were the main mandibular and maxillary changes, whereas in guinea pigs, peri-root swelling with focal bone loss in the maxilla, and thickening without lysis in the mandible, were more typical. Nasal cavity hyperattenuation—indicative of rhinitis—was the most common maxillary alteration in both rabbits (60%) and guinea pigs (83.3%), while exophthalmos occurred more often in rabbits (53.3%). In the mandibular region, space-occupying cavernous lesions appeared most frequently in rabbits (92.3%) and guinea pigs (73.3%). Dental-related secondary lesions were frequently encountered in both animals, confirming the diagnostic usefulness of CT for recognizing associated cranial and soft tissue alterations.

Keywords: Computed tomography, Rabbit, Guinea pig, Secondary dental pathology

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Introduction

Because the teeth of rabbits and guinea pigs have open roots, they continue to grow throughout life [1, 2]. Consequently, dental conditions and their complications are among the most widespread disorders in these herbivorous pets, reported in about 90% of rabbits [3] and 23.4–30.3% of guinea pigs in two separate investigations [4, 5]. Without treatment, these problems may prevent normal feeding and become life-threatening. Although dental disease is often identified clinically, imaging tools—such as intraoral endoscopy, radiographs, and computed tomography (CT)—play a key role in confirming the diagnosis. CT evaluation of the head offers advantages over standard radiography, especially when multiple areas of the jaw or maxilla are affected. It enables three-dimensional visualization of bone and soft tissues without overlapping structures, which commonly occur in radiographs. In addition, CT permits selective examination through various window settings, allowing detailed assessment of bone, dental, and soft-tissue anatomy. This makes CT particularly effective for detecting nasal and soft-tissue involvement [6–10]. Numerous studies have confirmed that CT provides the most accurate characterization of dental and periodontal changes, establishing it as the preferred diagnostic tool [10–13].

Dental disorders generally produce localized complications. Overgrowth of the coronal or apical regions of maxillary cheek teeth can lead to ocular discharge, dacryocystitis, or similar eye-related symptoms. Elongation of the anterior maxillary roots can encroach upon nasal passages, contributing to respiratory difficulties [5, 14]. Abscess development may occur secondary to tooth fracture, crown elongation, or periapical infection [15–19].

In veterinary literature, oral conditions in these two species are extensively documented, both as primary dental abnormalities and as non-dental pathologies [20]. A recent CT-based assessment [21] reported incidental cranial findings such as otitis (media or externa), rhinitis, and mineral deposits in soft tissues.

The goal of the present study was to map the occurrence of dental lesions in rabbits and guinea pigs and to describe secondary structural alterations identified through head CT imaging.

Materials and Methods

Animal selection and case description

This retrospective, multicenter descriptive study included rabbits and guinea pigs whose cranial CT scans revealed dental pathology and who had complete clinical information (species, age, symptoms, and diagnostic justification). All animals were companion pets examined at either the Vetsuisse Faculty, University of Zurich, Switzerland (Institution 1), or the Department of Veterinary Sciences, University of Pisa, Italy (Institution 2), between March 2019 and May 2023. Ethical approval was not required, and written consent from owners was obtained prior to CT imaging.

Image acquisition and data analysis

At Institution 1, head CTs were obtained using a 16-slice Brilliance CT scanner and, from October 2022 onward, a 64-slice IQon Spectral system (Philips, Zurich, Switzerland) with these parameters: slice thickness 0.8 mm, 120 kVp, 146–130 mA, Spiral Pitch Factor 0.288. Institution 2 performed scans on a 16-slice helical Revolution ACT (GE Medical Systems, Bergamo, Italy) using 1.25 mm slice thickness, 100 kVp, 120 mA, and Spiral Pitch Factor 0.75.

All animals were anesthetized and positioned in sternal recumbency. The anesthesia protocol was individualized. Premedication included intramuscular ketamine and dexmedetomidine. Each patient received 100% oxygen for 3–5 min before induction. Inhalation anesthesia was initiated with 5% isoflurane in oxygen within an induction chamber. Guinea pigs were maintained using a fitted face mask, whereas rabbits were endotracheally intubated; both were ventilated via a nonrebreathing circuit delivering isoflurane in oxygen. Vital signs were continuously tracked through a multiparameter monitor.

Post-Contrast Imaging

For contrast-enhanced sequences, each animal received 2 mL/kg of a non-ionic iodinated contrast solution (Institution 1: Accupaque 350, 350 mg I/mL, GE Healthcare, Glattbrugg, Switzerland; Institution 2: Iopamiro, 300 mg/mL, Bracco, Milan, Italy). At Institution 1, the contrast agent was administered as a bolus injection using an automated system (Accutron CT-D Medtron Injector, SMD Medial AG, Tägerwilen, Switzerland) with a delivery speed of 2 mL/s, while Institution 2 carried out manual injection. The delayed post-contrast acquisition was obtained 30–60 s following administration.

Data on species, breed, gender, body mass, and age were extracted from institutional hospital databases.

Image evaluation was carried out with the open-source Horos DICOM viewer (Horosproject.org, Annapolis, MD, USA).

Three reviewers independently analyzed all scans: one ECVDI-certified radiologist (F.D.C.), one Italian board-recognized radiologist (S.C.), and one Ph.D.-qualified veterinary radiologist specializing in diagnostic imaging (C.P.). After collaborative review, teeth with pathology were identified and grouped into five categories:

1. only incisor teeth (IT);
2. only premolars (PT);
3. only molars (MT);
4. both premolars and molars (PMT);
5. incisors, premolars, and molars together (IPMT).

The observers then recorded CT evidence of lesions secondary to dental abnormalities, using the system proposed by Del Chicca *et al*., 2023 [21].

Two broad lesion classes were recognized:

1. Changes affecting the maxillary or mandibular bone, and

2. Involvement of nearby tissues, including soft tissue regions, nasal cavities, nasopharynx, nasolacrimal ducts, ocular components, and the retrobulbar area.

These categories are summarized in **Table 1**. The "aggressive bone lesion linked to a tooth (3)" for either jaw referred to moderate–severe bone destruction around the tooth, occasionally with associated periosteal new bone formation.

Table 1. Outline and classification of CT findings in rabbits and guinea pigs. Lesion identifiers are indicated in parentheses.

Organ/System	Secondary Maxillary and Mandibular Bone Alterations	Bulging near Tooth Root, No Focal Lysis (1)	Bulging near Tooth Root, With Focal Lysis (2)	Aggressive Osseous Lesion Linked to Teeth (3)
Organ/System	**Secondary Alterations in Neighboring Anatomical Structures**			
Nasal Cavities	Increased radiodensity (suggestive of rhinitis) (1)	Space-occupying abnormality (2)	Partial or total loss of nasal conchae (3)	
Nasolacrimal Duct	Ductal enlargement (1)	Thickening of the wall (2)	Wall resorption or lysis (3)	Anatomical displacement (4)
Nasopharynx	Structural deviation or displacement (1)			
Retrobulbar Space	Retrobulbar mass or space-occupying process (1)			
Eye	Protrusion or exophthalmos (1)			
Soft Tissues	Diffuse soft-tissue edema (1)	Solid mass-forming lesion (2)	Cavitary or abscess-like lesion (3)	

Statistical analysis

Statistical work was carried out by a Ph.D.-level veterinary radiologist (C.P.) experienced in statistical methodology, using GraphPad Prism v9.0 (GraphPad Software Inc., San Diego, CA, USA). Data normality was assessed through the Shapiro–Wilk test. Summary statistics were then produced. For categorical variables (e.g., sex and breed), absolute counts and percentages were determined.

Associations between age and the number of affected teeth were evaluated for each species via the Spearman rank correlation. The Mann–Whitney U test was employed to compare the number of pathological teeth between males and females. Statistical significance was established at $p < 0.05$.

Results and Discussion

A total of 48 rabbit and 52 guinea-pig head CT scans demonstrating dental pathology met the inclusion criteria.

Among rabbits, the median weight was 1,800 g (range 1,090–4,180 g), and the median age was 65.75 months (range 15–115 months). The sample comprised 13 (27%) dwarf, 8 (16.7%) lop, 2 (4.2%) large-breed, 1 (2%) lionhead, and 24 (50%) unspecified rabbits. Of these, 27 (56.2%) were male (4 entire, 23 neutered) and 21 (43.7%) were female (8 entire, 13 neutered).

In guinea pigs, the median weight was 875 g (range 600–1,392 g) and the median age 35.25 months (range 6–96.5 months). Among them, 30 (57.7%) were male (3 intact, 27 neutered) and 22 (42.3%) were female (19 intact, 3 neutered).

Reasons for requesting CT examinations are presented in **Table 2**.

Table 2. Clinical indications for cranial CT imaging in rabbits and guinea pigs; "–" = none observed.

Clinical Sign / Condition	Rabbits (Number of Subjects)	Guinea Pigs (Number of Subjects)
Evidence of dental disease	16/48 (33.3%)	16/52 (30.7%)
Reduced appetite / anorexia	6/48 (12.5%)	8/52 (15.4%)

Facial or jaw swelling	12/48 (25%)	20/52 (30.4%)
Nasal discharge	7/48 (14.6%)	2/52 (3.8%)
Protrusion of the eyeball / exophthalmos	2/48 (2.1%)	2/52 (3.8%)
Eye discharge	3/48 (6.2%)	–
Loss of body weight	–	4/52 (7.7%)

No statistically meaningful link was identified between age and the quantity of affected teeth (p = 0.6 for rabbits; p = 0.09 for guinea pigs). Likewise, sex-related differences in the extent of dental involvement were non-significant (p = 0.4 for both species*).*

Among the examined animals, 27 of 48 (56.2%) rabbits and 25 of 52 (48.1%) guinea pigs exhibited maxillary dental disease, whereas 39 of 48 (81.2%) rabbits and 51 of 52 (98.1%) guinea pigs showed mandibular lesions. All subjects with abnormal dentition presented concurrent osseous changes.

Furthermore, 26 of 48 (54.2%) rabbits and 20 of 52 (38.5%) guinea pigs demonstrated additional lesions in neighboring maxillofacial structures, considered secondary to dental pathology.

Dental pathology and associated osseous lesions

Upper jaw (Maxilla)

In the rabbit group, 27 of 48 (56.2%) had maxillary dental involvement, with 10 of 27 (37%) exhibiting bilateral lesions.

For guinea pigs, 25 of 52 (48.1%) displayed maxillary abnormalities, 7 of 25 (28%) of which were bilateral.

Table 3 details the number of animals with pathology restricted to the maxilla compared with those showing disease in both jaws.

Table 3. Distribution of subjects with maxillary-only versus combined maxillary-mandibular dental abnormalities.

Species	Maxilla (No. of Subjects)	Maxilla and Mandible (No. of Subjects)
Rabbits	7/27 (25.9%)	20/27 (74%)
Guinea pigs	1/25 (4%)	24/25 (96%)

Maxillary lesions

Out of 25 rabbits, 23 (92%) showed only one form of secondary osseous alteration, either unilateral or bilateral, whereas 2 animals (8%) exhibited more than one lesion type.

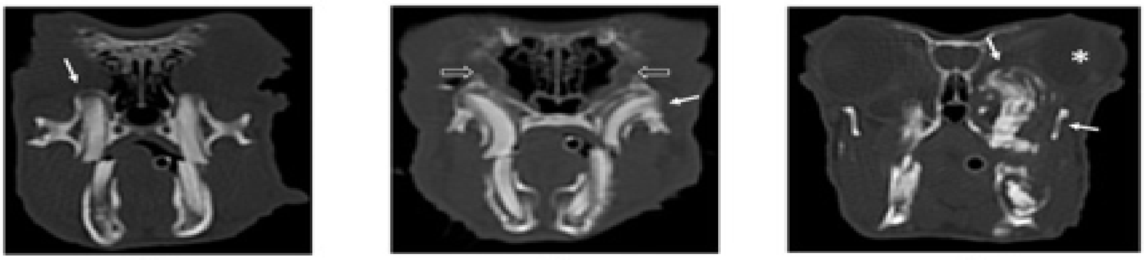
Among guinea pigs, 23 of 25 (92%) presented with a single category of bone modification (unilateral/bilateral), while 2 (8%) displayed multiple concurrent categories.

For the upper jaw (maxilla), the most common bone reaction noted in rabbits was an aggressive tooth-related lesion (3), affecting 14 of 25 (56%) individuals. In guinea pigs, the dominant alteration was tooth root bulging with localized lysis (2), observed in 20 of 25 (80%).

The bulging of the tooth root without visible lysis (1) appeared in 6 of 25 (24%) rabbits and in 6 of 25 (24%) guinea pigs, being a less frequent feature in the former but the second most common in the latter.

Only one guinea pig (4%) demonstrated an aggressive lesion (3) around the molar region.

Examples of the three lesion categories in both species are shown in **Figure 1**.



a) b) c)

d) e) f)

Figure 1. Axial CT reconstructions of the maxilla in three rabbits (a–c) and three guinea pigs (d–f) processed with a bone filter. (a,d) display root bulging without focal lysis (white arrow); (b,e) show bulging accompanied by focal bone loss (white arrow) with enlarged nasolacrimal ducts in (b) (empty arrows); (c,f) reveal aggressive lesions adjacent to teeth (white arrow). Note the exophthalmos in (c) (white asterisk).

Pathological changes of incisor teeth occurred in only two subjects—one rabbit and one guinea pig—each associated with root bulging and focal bone loss (2).

Involvement of premolars and molars differed between species across lesion categories 1 and 2.

All findings regarding maxillary dental disease and linked bone changes are summarized in **Table 4**.

Table 4. Classification of maxillary pathological teeth and secondary bone changes in rabbits and guinea pigs. IT: incisor teeth only; PT: premolars only; MT: molars only; PMT: premolars and molars; IPMT: incisors, premolars, and molars; "–": none.

Secondary Bone Lesion	Species	Number of Subjects	Teeth Groups Involved (No. of Subjects)				
			IT	PT	MT	PMT	IPMT
1	Rabbits	4	–	1	5	–	–
	Guinea Pigs	6	–	2	3	3	–
2	Rabbits	10	1	–	7	6	2
	Guinea Pigs	20	1	–	13	9	–
3	Rabbits	14	–	7	4	3	–
	Guinea Pigs	1	–	–	1	–	–

Mandibular pathology and secondary bone alterations

Among rabbits, 39 of 48 (81.2%) exhibited mandibular dental disease, of which 21 (53.8%) were bilateral.

In guinea pigs, 51 of 52 (98.1%) had mandibular involvement, with 41 (80.4%) presenting bilateral lesions.

An overview of individuals with exclusive mandibular lesions or combined maxillary–mandibular involvement is provided in **Table 5**.

Table 5. Distribution of mandibular-only and dual-jaw dental abnormalities.

Species	Mandible Only (No. of Subjects)	Both Maxilla and Mandible (No. of Subjects)
Rabbits	21/39 (53.8%)	18/39 (46.1%)
Guinea Pigs	27/51 (53%)	24/51 (47%)

In rabbits, 21 of 39 (53.8%) displayed a single type of bone alteration (unilateral/bilateral), whereas 18 of 39 (46.1%) had multiple lesion types.

In guinea pigs, 24 of 51 (47%) also presented upper jaw changes, while 27 (53%) showed lesions confined to the mandible.

Among them, 26 of 51 (51%) had one lesion form, and 25 (49%) exhibited two or more bone lesion categories.

For the lower jaw, the most prevalent secondary bone lesion in rabbits was the aggressive tooth-associated lesion (3), noted in 24 of 39 (61.5%) individuals.

In guinea pigs, the most common mandibular alteration was root bulging without focal lysis (1), detected in 37 of 51 (72.5%) cases.

Illustrative CT slices of these three mandibular lesion variants appear in **Figure 2**.

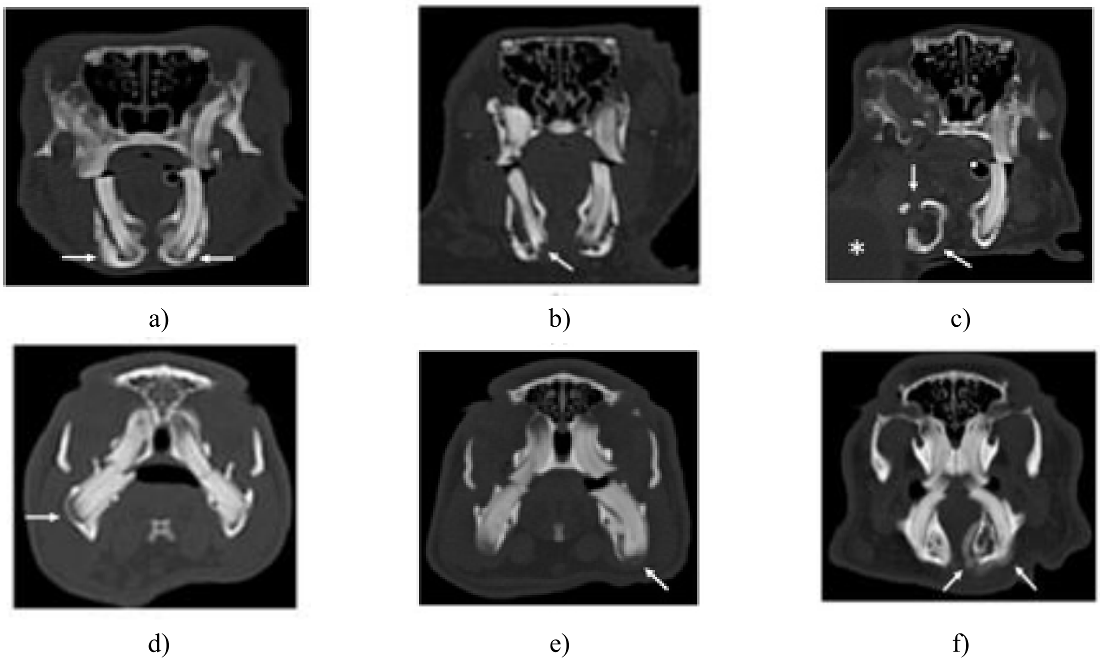


Figure 2. Transverse CT views showing mandibular bone reactions in three rabbits (a–c) and three guinea pigs (d–f) reconstructed with a bone algorithm. (a,d) represent tooth root bulging without focal lysis (white arrows); (b,e) illustrate root bulging with focal bone resorption (white arrow); (c,f) demonstrate aggressive, tooth-linked lesions (white arrow). A soft tissue mass effect is visible in (c) (white asterisk).

In guinea pigs, incisors (IT) were most often affected by aggressive lesions (3).
Both species showed variable distribution of premolar and molar involvement across the three lesion groups.
Only three rabbits and three guinea pigs displayed IPMT participation—in rabbits, these corresponded to aggressive lesions (3), whereas in guinea pigs, two had bulging with focal lysis (2) and one had aggressive lesions (3).
A detailed summary of mandibular tooth pathology and associated secondary bone findings is given in **Table 6**.

Table 6. Classification of mandibular pathological teeth and related secondary bone lesions in rabbits and guinea pigs. IT: incisors only; PT: premolars only; MT: molars only; PMT: premolars and molars; IPMT: incisors, premolars, and molars; "–": none.

Secondary Bone Lesion	Species	Subjects (No.)	Teeth Groups Affected (No. of Subjects)				
			IT	PT	MT	PMT	IPMT
1	Rabbits	11	–	4	4	7	–
	Guinea Pigs	37	–	33	6	11	–
2	Rabbits	13	1	5	2	8	–
	Guinea Pigs	26	1	10	8	11	2
3	Rabbits	24	5	6	8	5	3
	Guinea Pigs	19	12	–	6	1	1

Diseased teeth and their secondary effects on neighboring anatomical structures

Secondary alterations in adjacent maxillary structures (Upper arcade)

Out of 26 examined rabbits, 13 animals (50%) exhibited changes limited to the maxillary area, while 2 cases (7.7%) showed involvement of both the maxilla and mandible.
Among guinea pigs, 5 of 20 (25%) demonstrated maxillary alterations only, and 1 animal (5%) showed combined bone lesions in both upper and lower jaws.
Details of the affected teeth and associated lesions are summarized in **Table 7**.

Table 7. Secondary changes in the adjacent maxillary anatomical structures in rabbits and guinea pigs, along with the corresponding diseased teeth and bone abnormalities. Abbreviations: PT—premolar teeth; MT—molar teeth; PMT—premolar and molar teeth; M3—third molar; NDL—nasolacrimal duct. Symbols represent specific patient counts differing from totals: (α) = 3/4; (β) = 1/4; (χ) = 4/7; (δ) = 3/7; (ε) = 1/2; "–" = none.

Species	Affected Teeth	Secondary Bone Lesion	Adjacent Structure Involvement				No. of Subjects
			Nasal Cavities	Nasolacrimal Duct (NLD)	Eye	Retrobulbar Space	Nasopharynx
Rabbits	PMT	3	–	–	1	–	–
	PMT	2	1 (α)	1, 2, 3 (β)	1 (β)	3 (β)	–
	PMT	3	1 (χ)	4 (χ)	1 (δ)	2 (δ)	–
	MT	3	1 (ε)	2 (ε)	–	1	2
	MT	3	1	–	1	2	–
Guinea Pigs	PMT	2	1	–	–	–	–
	MT (M3)	2	–	–	1	–	–
	MT (M3)	3	1	–	1	1	–

Among the rabbits, 15 of 26 (57.7%) exhibited lesions affecting maxillary bone structures due to dental abnormalities. These were right-sided in 7, left-sided in 5, and bilateral in 3 animals.

Nasal involvement was observed in 9 of 15 (60%) cases, presenting as areas of increased nasal cavity attenuation consistent with suspected rhinitis (1). Of these, one animal had both a space-occupying mass (2) and conchal destruction (3), and another exhibited a similar mass (2) without conchal loss.

In six of the nine animals with rhinitis, concurrent nasolacrimal duct alterations were detected—one showing ductal enlargement (1), one showing wall lysis (3), and four showing displacement signs (4).

Exophthalmos (1) appeared in 8 of 15 (53.3%) rabbits, six of which had a retrobulbar space-occupying mass (2); in one of these, the lesion extended to cause nasopharyngeal displacement (1).

All teeth other than the incisors were affected. Eleven rabbits (73.3%) displayed aggressive bone destruction linked to diseased teeth (3), while four (26.7%) showed root bulging accompanied by focal lysis (1).

Among guinea pigs, 6 of 20 (30%) exhibited secondary maxillary lesions—4 on the right, 1 on the left, and 1 bilateral.

Of these, 5 animals (83.3%) presented nasal hyperattenuation (possible rhinitis) (1), and one of them (16.7%) also had exophthalmos (1) related to a retrobulbar lesion (2). Another single case showed only exophthalmos (1).

No alterations of the nasolacrimal duct or nasopharynx were noted.

The affected teeth included PT and MT, either separately or together. Five of six displayed focal lysis with root bulging (2), and one animal (16.7%) showed aggressive bone resorption associated with the diseased tooth (3).

Secondary alterations in adjacent mandibular structures (lower arcade)

In rabbits, 11 out of 26 (42.3%) showed mandibular involvement alone, while 2 (7.7%) had combined mandibular and maxillary lesions.

Among guinea pigs, 14 of 20 (70%) displayed mandibular lesions only, with 1 animal (5%) showing bone involvement of both arches.

The corresponding data and affected teeth are provided in **Table 8**.

Table 8. Secondary mandibular anatomical changes in rabbits and guinea pigs, along with the affected teeth and resulting bone pathology. Abbreviations: PT—premolar teeth; MT—molar teeth; PMT—premolar and molar teeth; M3—third molar.

Species	Affected Teeth	Secondary Bone Lesion	Soft Tissue Involvement	Number of Subjects
Rabbits	PT	3	3	2
	PMT	3	3	2

	MT	3	3	4
	IPMT	2	1	1
	IPMT	3	3	4
Guinea Pigs	IT	3	1	1
	IT	3	2	1
	IT	3	3	6
	PT (P1)	3	3	1
	MT	3	3	6

Among rabbits, 13 of 26 (50%) displayed mandibular bone involvement—12 cases with aggressive bone resorption (3) and 1 case with localized bulging and lysis (2). The lesions were right-sided in 8, left-sided in 3, and bilateral in 3 individuals.

Soft-tissue changes accompanied these findings: 12 of 13 (92.3%) showed cavernous space-occupying lesions (3), while 1 rabbit (7.7%) had diffuse swelling (1).

The affected teeth included IPMT in 5 rabbits, PT in 2, MT in 4, and PMT in 2. A total of 12 of 13 (92.3%) demonstrated aggressive bone loss linked to the diseased teeth (3).

For guinea pigs, 15 of 20 (75%) showed aggressive bone lesions associated with affected teeth (3), occurring on the left in 7 and right in 8 individuals.

Every affected animal had concurrent soft-tissue changes—11 of 15 (73.3%) had cavernous space-occupying lesions, 1 (6.6%) exhibited a solid mass, and 1 (6.6%) showed diffuse soft-tissue swelling. The case with the solid lesion also demonstrated hyoid bone displacement.

Involved teeth included IT, PT, and MT. All showed aggressive bone pathology linked to diseased teeth (3).

Computed tomography (CT) imaging of the skull is often requested for small pets that present clinical signs suggestive of dental disorders, including epiphora, exophthalmos, swelling or deformity of the maxillary or mandibular bones, and abscess formation. Rabbits and guinea pigs are particularly susceptible to odontogenic problems; therefore, the present investigation aimed to characterize and compare the secondary structural alterations resulting from dental pathology in these two species, focusing on the maxilla, mandible, and surrounding anatomical regions.

Across all examined cases, dental pathology was consistently associated with osseous abnormalities in either the upper or lower jaws. In both species, mandibular lesions were more frequent than those affecting the maxilla.

Among rabbits, the most common secondary skeletal change was the aggressive bone lesion associated with teeth (3), observed in both jaw regions. In contrast, guinea pigs exhibited a predominance of tooth root bulging with focal lysis (2) and bulging without focal lysis (1), affecting the maxilla and mandible, respectively.

The results suggest that CT scans in rabbits may often be performed at more advanced stages of dental disease, likely because clinical manifestations emerge later than in guinea pigs. This may imply that aggressive bone lesions develop from milder bone modifications such as focal or non-focal root bulging. Interestingly, only lesions classified as categories (2) and (3) were linked to alterations in adjacent anatomical structures, whereas category (1) was not. Follow-up CT evaluations in individuals exhibiting bulging without lysis could therefore be beneficial to monitor potential progression toward more extensive perialveolar bone damage.

In both species, the upper incisor teeth were less frequently affected by dental disease and secondary bone alterations. Conversely, lower incisors were commonly involved in guinea pigs and appeared more frequently affected than in rabbits. This difference may be related to anatomical features—rabbits possess upper and lower incisor crowns of similar length, whereas in guinea pigs the mandibular crowns are typically longer [22, 23]. Furthermore, guinea pigs kept in cages may gnaw on metal bars, and this mechanical stress could contribute to increased lower incisor involvement.

Rabbits exhibited a greater rate of secondary alterations in maxillary neighboring structures than guinea pigs, most notably exophthalmos and nasal cavity hyperattenuation, consistent with suspected rhinitis. Anatomical configuration likely plays a role: in rabbits, the eyes are positioned dorsally relative to the premolar and molar roots, while in guinea pigs, they are located more laterally. Consequently, retrobulbar alterations may more readily produce eye displacement in rabbits, as previously documented [24].

Increased nasal cavity attenuation was evident in both species. Because of the close proximity between the dental roots and nasal passages, advanced dental infections can indirectly affect nasal tissues [24]. However, in some animals, inflammation of the nasal cavities may arise as a primary process, independent of dental disease [21, 25]. Among the rabbits with maxillary abnormalities, 6 of 15 (40%) showed lesions involving the nasolacrimal duct, while no such involvement was seen in guinea pigs. This difference may be explained by anatomy: in rabbits, the roots of incisors and premolars lie near the nasolacrimal duct, predisposing them to obstruction in cases of root elongation [26–30]. In guinea pigs, however, the roots of premolars and molars are more oblique, reducing the likelihood of duct compression, which aligns with the lack of such cases in this species.

Secondary changes affecting mandibular adjacent structures were more frequent in guinea pigs than in rabbits, with both species showing cavernous space-occupying soft-tissue lesions consistent with abscesses. In both rabbits and guinea pigs, the aggressive bone lesion associated with teeth (3) was the most common mandibular abnormality.

This study has several limitations. Being retrospective, there may be inherent selection bias in the animals included. Additionally, the use of different CT scanners and imaging protocols might have influenced diagnostic sensitivity. Finally, not every case underwent a contrast-enhanced CT, which could have limited the detection of certain soft-tissue features. Nevertheless, since most dental and osseous pathologies can be clearly identified in non-contrast scans, this limitation may not have significantly affected interpretation. Post-contrast imaging, however, might still have provided complementary diagnostic information.

Conclusion

In summary, CT examination of the skulls in rabbits and guinea pigs with dental disorders proved effective in identifying secondary changes in both species. All animals presented periodontal bone lesions, while adjacent anatomical involvement was more extensive and frequent in rabbits compared with guinea pigs.

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Conflict of Interest: None

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Ethics Statement: None

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