

INCIDENCE OF SOME TEETH AND OCCLUSION
ABNORMALITIES IN DOGS: A RETROSPECTIVE STUDY
(1995–2002)

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The aim of the present study was to investigate the incidence of abnormalities in development and disposition of teeth as well as their clinical manifestations.

Teeth and jaw abnormalities are viewed as a problem, because several congenital abnormalities, affecting single teeth or entire dental rows, could subsequently cause permanent disorders in feeding (Moissonnier, 1990; Holmstrom *et al.*, 1998).

According to some authors (Oakes & Beard, 1992; Pavlica & Cestnik, 1995; Fraser, 1996; Grossley, 1996; Brine, 1999), one of the commonest teeth abnormality in dogs is the lingual disposition of canines.

It is assumed that teeth and occlusion abnormalities were most frequently inherited (Harvey & Emily, 1993; Heiniger *et al.*, 2001), consequence to rachitis (Debowes, 1998; Liou *et al.*, 2000), jaw fractures or traumas (Fraser, 1996; Ren & Maltha, 2003), inflammations of the mandibular joint (Hennet, 1997; Wiggs & Lobprise, 1997), endocrine disorders (Oakes & Beard, 1992; Pavlica & Cestnik, 1995; Fraser, 1996) or inappropriate nutrition (Jonston, 2001).

The teeth abnormalities and especially the lingual disposition of canines is considered to be genetically determined

(Oakes & Beard, 1992; Pavlica & Cestnik, 1995; Fraser, 1996). According to Leen (2001), this abnormality is accompanied with discomfort and pain, secondary development of mucosal ulceration, infection or oronasal fistula.

Teeth abnormalities in dogs could be categorized in two principal groups (Harvey, 1985; Emily, 1990; Kertesz, 1993; Leen, 2001): 1. abnormalities in teeth development and occlusion and 2. pathology, related to their incorrect abrasion. The subject of the present retrospective study were the abnormalities from the first group.

There are several definitions, criteria and methods for evaluation of the normocclusion in dogs, the most popular of them being that of Jonston (2001). According to the author, there are inconveniences related to the assessment of the normocclusion because of the skull shapes in the various dog breeds (dolichocephalic, mesaticephalic and brachycephalic).

Goldstein (1990), Hale (1991) and Pavlica (2001) emphasized on the primary significance of the genetic control for limitation of teeth and occlusion abnormalities in dogs, stating that prophylactic dental examinations should be performed at an early age.

The retrospective study on teeth and occlusion abnormalities in dogs was performed on the basis of patients' records of 759 dogs at the age between 7 and 18 months, referred to the dental ward of the Surgical Clinic at the Faculty of Veterinary Medicine, Stara Zagora, between 1995 and 2002.

The type of abnormalities were evaluated on the basis of clinical signs, dental status and radiological studies using the criteria outlined by Harvey (1985), Emily (1990), Holmstrom *et al.* (1998), Jonston (2001), Borissov & Sivrev (2002).

The dogs with teeth and occlusion abnormalities were divided into groups according the year of incidence, the breed and the type of observed anomaly.

From all 759 dogs, examined at the dental ward between 1995 and 2002, 208 or 27.4% were with teeth and occlusion abnormalities.

The annual distribution of patients is presented in Table 1. It shows that the number of dogs referred to the clinic for consultation or treatment of teeth or occlusion abnormalities was continuously increasing. This increase was particularly

evident during the last 3 years of the observation period when the number of patients was about 3–4 times higher than that in 1995.

The breed-related prevalence of abnormalities is shown in Table 2. The most frequently affected were Miniature Pintschers (22.5%), followed by Poodles (21.2%), Bologneses and Pekingeses. The sum of percentages in those four breeds was 78.8%, whereas in the other 5 large breeds (Doberman, Rottweiler, Riesen Schnautzer, German Sheepdog and Caucasian Ovcharka) it was 21.2%. From all large breeds, Rottweilers were most frequently affected by teeth abnormalities – 5.3%.

Table 3 shows the incidence of the different types of teeth and occlusion abnormalities for the period 1995–2002. The commonest abnormality was polyodontia (33.2%). Together with polyodontia and ectopy (5.8%), the total number of dogs with supernumerary teeth was 39.0%. This anomaly was observed predominantly in small breeds (Pekingeses, Miniature Pintschers, Terriers etc.). In most cases, the pathology affected maxillar and mandibular canines or incisors. In almost all cases, the supernumerary teeth caused gingival traumas and paradontopathy – pathological processes causing discomfort and oral malodour appearance.

In the second place, 41 patients (19.7%) presented retention of deciduous teeth and in the third place, there were 7.7% dogs with lingual disposition of canine teeth. Recently, this abnormality was encountered more and more commonly in some pedigree German Sheepdog and Rottweiler dogs.

The dogs with abnormal disposition of incisors were 4.33%. This anomaly was observed independently or combined with supernumerary teeth or retented deciduous

Table 1. Annual incidence of the teeth abnormalities in dogs (1995–2002)

Year	Total number of dogs with stomatological diseases	Dogs with teeth abnormalities
1995	53	14
1996	58	18
1997	74	21
1998	93	23
1999	106	26
2000	113	30
2001	123	34
2002	139	42
Total	759	208

Table 2. Incidence of teeth abnormalities in the various dog breeds (1995–2002)

Dog breeds	Number of dogs with abnormalities	Percentage of abnormalities vs the total number
Miniature Pinscher	47	22.5
Poodle	44	21.2
Pekingese	32	15.4
Bolognese	41	19.7
Doberman	15	7.2
Rottweiler	11	5.3
Riesenschnautzer	3	1.4
German Sheepdog	8	3.8
Caucasian Ovcharka	7	3.4
Total	208	100.0

Table 3. Incidence of the various teeth abnormalities in dogs (1995–2002)

Teeth and occlusion abnormalities	Incidence of abnormalities	
	Number	Percentage
Polyodontia	69	33.20
Retained deciduous teeth	41	19.70
Prognathism	21	10.00
Lingual disposition of canines	16	7.70
Polyodontia and dental ectopy	12	5.80
Brachygnathism	12	5.80
Campylognathism	10	4.80
Disposition of incisors	9	4.33
Wry mouth	8	3.85
Oligodontia	8	3.80
Dental interlock	7	3.40
Convergent roots	3	1.45
Supernumerary roots	2	0.96
Total	208	100.00

teeth.

From occlusion abnormalities, 21 patients (10%) exhibited prognathism and almost twice lower was the number of dogs with brachygnathism.

The radiological changes in teeth and occlusion abnormalities could hardly be

summarized as they were strictly individual and related to the type of the defect. They were generally confirming the dental status findings, but nevertheless, the radiological examination was necessary in order to illustrate the degree of the abnormality. For example, in a dog with

oligodontia, it could tell whether the condition was due to oral trauma or was inherited and in such cases, the radiography was strongly advised.

The observed tendency toward increase in the percentage of dogs with teeth and occlusion abnormalities during the last years shows that the problem is existent in our country as well. The causes are numerous and various. In our opinion, one of them is the lack of genetic control from the part of veterinary practitioners, dog breeders and pet owners. Andrews (1972) and Skrenty (1987) consider that there is a genetic predisposition of some small dog breeds to development of teeth and occlusion abnormalities. A considerable part of teeth abnormalities are transmitted via autosome recessive inheritance. This pathway is probably not the only one, so we support the thesis about the need for genetic studies on teeth malformations in the different dog breeds.

Sometimes, those abnormalities are discovered not on time and affected animals are not excluded from breeding, so teeth malformations become more and more common. The late recording of those defects is responsible for their increased prevalence in the progeny (Dolle & Spurgeon, 1998; Lommer & Verstraete, 2000; Pavlica, 2001).

Having studied the causes for teeth and occlusion abnormalities, those authors presume also other causes as other dental, deficiency or endocrine disorders. Those assumptions are also confirmed by Butcovic (2001) and Grossley (2003).

In our opinion, the polyodontia of deciduous canine teeth is due to its extradeveloped root, where destructive or lytic processes are less common. Therefore, we recommend the extraction of deciduous teeth at the age of 7–8 months, after the appearance of permanent ones. According

to our observations, the permanent incisors, canines or premolars are rarely supernumerary teeth. Furthermore, we suppose that the premature changing of teeth could result in the so-called false oligodontia, as the respective permanent teeth, whose growth causes resorption of roots of the deciduous dentition, are lacking.

The data about the prevalence of teeth and occlusion abnormalities in the different dog breeds show that small breeds (Poodles, Miniature Pinschers, Pekingese and Bolognese) were more commonly affected than large breeds. This fact is consistent with the findings in other investigations (Borissov, 1999; Hennes, 1999) that dental disorders were significantly more prevalent in small breeds than in large ones.

The manifold increase in the number of dogs with teeth and occlusion abnormalities is most probably due to the increase in pet populations during the last years, thus causing a prominent and various pathology.

One of the important aims is to observe whether a given abnormality is inherited and to take measures for controlling its further spreading.

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Paper received 15.05.2003; accepted for publication 26.01.2004

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