RESEARCH CASE REPORT

BILATERAL MAXILLARY SUPERNUMERARY INCISORS IN A DOG

Nejra Dučić[1*], Faruk Tandir[1,2], Rizah Avdić[2], Muamer Obhođaš[3]

[1] Veterinary Clinical Center, Clinic for Veterinary Stomatology, University of Sarajevo - Veterinary Faculty, Sarajevo, Bosnia and Herzegovina

[2] Department of Basic Sciences of Veterinary Medicine, University of Sarajevo - Veterinary Faculty, Sarajevo, Bosnia and Herzegovina

[3] Veterinary Clinical Center, Clinic for Surgery, Anesthesia and Resuscitation, University of Sarajevo - Veterinary Faculty, Sarajevo, Bosnia and Herzegovina

***Corresponding author:**
Nejra Dučić, DVM
Veterinary Clinical Center, Clinic for Veterinary Stomatology, University of Sarajevo - Veterinary Faculty
Sarajevo/Bosnia and Herzegovina

Adress:
Zmaja od Bosne 90
71000 Sarajevo
Bosnia and Herzegovina
Phone: +387603171441
ORCID: 0000-0002-1373-8640
E-mail: nejra.ducic@vfs.unsa.ba

Original Submission:
02 February 2023
Revised Submission:
27 February 2023
Accepted: 06 March 2023

How to cite this article:
Dučić N, Tandir F, Avdić R, Obhođaš M. 2023. Bilateral maxillary supernumerary incisors in a dog – A case report. Veterinaria, 72(1), 113-18.

ABSTRACT

Supernumerary teeth are categorized under the notion of teeth which are present along with the ordinary dental standard. Their etiology is uncertain, but genetic mutations seem to be the most likely cause. They have been reported in several dog breeds and are usually associated with crowding, malocclusion and increased risk of periodontal disease. A supernumerary tooth requires extraction if it becomes a cause of crowding or displacement of other teeth. The present report describes the case of bilateral maxillary supernumerary incisors in a male pet American Staffordshire Terrier who was referred to the Veterinary Stomatology Clinic of the Veterinary Faculty of Sarajevo.

Keywords: Hyperdontia, incisor, tooth

INTRODUCTION

Teeth irregularities can be genetically generated due to disruptions in the disparity of the dental lamina and the tooth buds. They are correspondingly regular in dogs, mainly in pureblooded dogs in which the hereditary defect has been sustained (Pavlica et al., 2001). Differences in the teeth figure are customary in the animal world. Hyperdontia represents the evolution of additional or supernumerary teeth in the jaws. This disorder has also been referred to as polydontia or hyperdentition (Dixon et al., 2005). The phrase supernumerary is to be understood as a tooth which exists alongside the ordinary figure of teeth which are to be found in any dental arcade. When it comes to the human dental medicine, expressions such as supplemental as well as rudimentary are applied to deliniate teeth to a greater extent. When it comes to the supplemental teeth, those are the ones which bear a resemblance to the classification of teeth to which they are associated with. As for the rudimentary teeth, they would be normally small-scaled and somewhat cone-shaped in contrast to the typical appearing tooth (Nazif et al., 1983). Supernumerary teeth are classified according to their location as "normotopic, " which develop inside the alveolar region, or "heterotopic" which develop outside the alveolar region, such as the surrounding jaw, sinuses, or nasal cavity (Ortner, 2003; Corbera et al., 2017). They can be single or multiple; unilateral or bilateral; and in one or both jaws (Neville et al., 2018). Supernumerary teeth are believed to advance from an ongoing expansion of the persistent or deciduous dental lamina in order to shape a tertiary tooth germ, or out of disruptions in the course of tooth growth. They are to be observed in both primary or permanent dentition, although they are more common in permanent dentition (Lobprise and Dodd, 2019). The existence of supernumerary teeth is to be found in some particular dog breeds. According to the Greyhounds research, the mass widespread position for a supernumerary tooth was distal to the maxillary and mandibular canine teeth, whereas the configuration was commonly that of a primary premolar tooth (Dole and Spurgeon, 1998). Supernumerary teeth are usually found in Bulldogs, Greyhounds, Boxers, and Rottweilers, whereas they are scarcely observed in cats (Dole and Spurgeon, 1998; Pavlica et al., 2001). Extra teeth can cause crowding, and they can also increase the risk of periodontal disease (Lobprise and Dodd, 2019). Supernumerary teeth which are still unimpacted as well as intimately connected with the roots of adjoining teeth may necessitate a removal in order to avoid the occurrence of root resorption of the impacted or unimpacted teeth (Lobprise and Dodd, 2019). If a supernumerary tooth causes crowding and/or displacement of other teeth, it should be extracted the same moment it's observed (Dole and Spurgeon, 1998). Unsuccessful attempt in that matter may lead to plaque retention and premature periodontitis, which leads to the loss of adjacent teeth in addition to the supernumerary tooth (Hale, 2005). The present report aimed to describe the case of supernumerary teeth in a pet American Staffordshire Terrier.

CASE DESCRIPTION

A 1.5-year-old 32-kg intact male American Staffordshire Terrier was referred to the Veterinary Stomatology Clinic of the Veterinary Faculty of Sarajevo for evaluation of suspected retained deciduous teeth. On physical examination, the patient was cooperative, alert, and responsive. The first oral evaluation of a patient that hasn't been sedated was carried out with a final outcome in the image of two supernumerary teeth located in the upper jaw in both left and right diastema, between the third incisor and canine tooth (Figure 1). The patient was sedated and anesthetized, and a complete oral examination with periodontal probing was performed.

Figure 1 Photograph of the maxilla showing the incisors, canines and supernumerary teeth (asterisks)

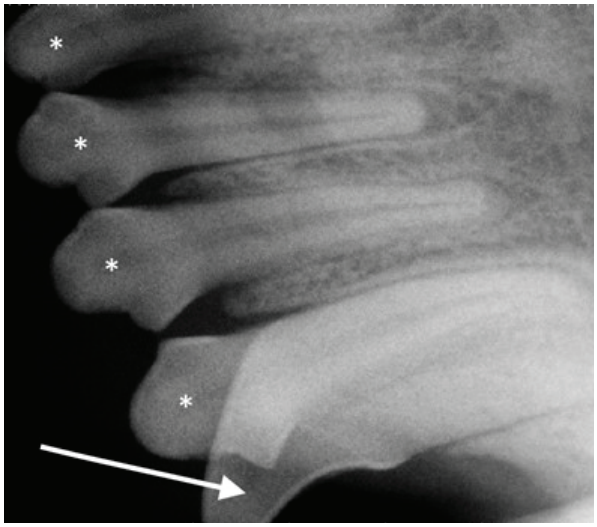

Figure 2 Intraoral radiographic view of the right maxilla showing the incisors (asterisks) and the supernumerary tooh (arrow)

No signs of other clinically relevant disorders were detected. Sedation was induced by xylazine hydrochloride (1.5mg/kg IM), followed by induction with ketamine (2.5 mg/kg IV) and xylazine (0.5 mg/kg IV). Endotracheal intubation was performed using Magill type 7.5 mm cuffed endotracheal tube. One perioperative injection of meloxicam (0.2 mg/kg SC) was administered. Intraoral radiographs of the area of the right diastema were obtained and confirmed the suspected finding of the supernumerary tooth (Figure 2). The same tooth was present in the left diastema. Morphologically, these teeth resembled a third incisor tooth. Both left and right supernumerary teeth were located in the area of diastema, behind the third incisors, with the longitudinal axis placed vestibulopalatally and more horizontally. The labial surface of the tooth in the alveolus was facing the palatal surface of the third incisors. The distal surface of the tooth faced labially, while the mesial surface of the tooth faced palatally.

With the patient under general anesthesia, right and left rostral maxillary (infraorbital) blocks were performed using lidocaine hydrochloride (2mg/kg). The extraction of the supernumerary teeth was performed using various instruments. A combination of 559/1 and 559/2 Bein elevators was used to loosen the teeth from the periodontal sockets and separate the periodontal ligaments from the teeth. Pedodontic Cryer #150S forceps was used to extract the teeth. The patient recovered well after anesthesia and was subsequently released in the custody of his keeper on the same date. Postoperative instructions included recommendation to ensure semi-liquid nourishment for 10 days after the conducted method. Reevaluation was carried out 14 days following the course of action. No indications of struggle and unease were observed, and the site which has been the object of treatment has been fully recuperated. The patient was eating well and showed usual behaviour. The extracted teeth were evaluated in size and shape. Resorption was found

in both teeth, although it was more pronounced on the right tooth in the area of the cervical third of the crown and the cervical third of the root. Morphologically, they resemble the third incisor teeth (Figure 3).

Figure 3 Supernumerary teeth after extraction (L – left, R – right)

The measurements: total tooth length (TTL), crown length (CL), root length (RL), tooth crown width (TCW) and the thickness of the tooth crown (TTC) in both teeth were evaluated according to Tandir (2010). These parameters were measured using an electronic digital caliper with a precision of 0.01 mm. The results are shown in the table below (Table 1).

Table 1 Parameters of extracted supernumerary teeth

Parameters	Right supernumerary tooth	Left supernumerary tooth
TTL	24.30 mm	24.10 mm
CL	7.64 mm	4.46 mm
RL	16.66 mm	19.64 mm
TCW	6.02 mm	6.83 mm
TTC	4.81 mm	5.83 mm

DISCUSSION AND CONCLUSION

The existence of supernumerary teeth in the oral space of human beings and wildlife has typically been insufficiently evaluted in the past (Mulherin and White, 2021). The etiology of the supernumerary teeth is uncertain, but it is believed that atavism, dichotomy of the tooth germ, excessive growth of the dental lamina, hereditary factors and general diseases could be potential causes (Kumar and Gopal, 2013). In this case, the most likely cause would be hereditary factors and genetic mutation, considering it is a purebred dog in which these types of abnormalities are relatively common. After the recognition of supernumerary teeth in the arcade, they will possibly require the extraction in case it is established that they are arising in intimate proximity with the adjoining teeth, and all that so to diminish the frequency of periodontal malady, which is connected with supernumerary teeth. Traumatic occlusion may take place as an extra difficulty because of the untypical teething within the dental arcade and because of the existence of a supernumerary tooth/teeth (Mulherin and White, 2021). In veterinary medicine,when it comes to supernumerary teeth, some expositions were disclosed. According to Kuiper et al. (1982), 47 dogs have been diagnosed with polydontia, with Boxer as the most frequent breed. Supernumerary teeth are allegedly existing in 11% of dog breeds. When it comes to the dolichocephalic breeds, such as Greyhounds (with a supposed percentage of 36% frequency of supernumerary teeth), no interference is needed. Still, when it comes to the brachycephalic breeds, or if a supernumerary tooth causes crowding, it should be immediately extracted (Dole and Spurgeon, 1998). A prevalence of 4.5% of captured Japanese raccoon dogs (*Nyctereutes Procynoides Viverrinus T*) from the Northern part of Kyushu in Japan also showed the presence of supernumerary teeth (Harada et al., 1989). The appearance of supernumerary teeth has been described in horses as well. Supernumerary permanent incisors are usually morphologically identical to normal incisors, but they have very long (<7 cm in length) crowns and roots, especially in young horses. Extraction of these teeth is usually very difficult and risks damaging the adjacent teeth. Unless the supernumerary teeth cause great displacement, they should not be extracted (Dixon and Dacre, 2005). In ruminants, the abnormal presence of 2 teeth positioned laterally at the dental pad was observed in an 8-month-old female ewe (Corbera et al., 2017).

Since the patient in our case is bred for dog shows, the owner insisted on the extraction of supernumerary teeth. According to the FCI standards for the American Staffordshire Terrier, upper teeth should meet tightly outside the lower teeth in front. The full complement of canine teeth, well developed and large should be engaged in a well-fitting scissors bite. Any dog clearly showing physical or behavioural abnormalities gets disqualified.

Considering that the supernumerary teeth did not fully emerge from the alveoli, it is assumed that with the complete growth these teeth would push the lower canines vestibularly, which would disturb the normal occlusion. In addition to aesthetic reasons, the extraction procedure is also justified for the above-mentioned reasons.

CONFLICT OF INTEREST

The authors declared that there is no conflict of interest.

CONTRIBUTIONS

Concept – ND; Supervision – RA; Data Collection and/or Processing – ND, FT, MO; Analysis and/or Interpretation – ND, FT, MO; Literature Search – ND, RA; Writing Manuscript – ND, FT; Critical Review – FT, RA.

REFERENCES

Collados J, Rice CA. 2017. Diagnostic Imaging in Veterinary Dental Practice. J Am Vet Med Assoc, 250(11), 1239-41. doi:10.2460/javma.250.11.1239.

Corbera JA, Morales I, Martin S, Arencibia A, Gutierrez C. 2017. A Case of Congenital Supernumerary Teeth in an Ovine Dental Pad. J Vet Dent, 34(4), 279-281. doi:10.1177/0898756417734378.

Dixon PM, Dacre I. 2005. A review of equine dental disorders. Vet J, 169(2), 165-87. doi:10.1016/j.tvjl.2004.03.022.

Dixon PM, Easley J, Ekmann A. 2005. Supernumerary teeth in the horse.Clin Tech Equine Pract, 4(2), 155-61. doi:10.1053/j.ctep.2005.04.007.

Dole RS, Spurgeon TL. 1998. Frequency of supernumerary teeth in a dolichocephalic canine breed, the greyhound. Am J Vet Res, 59(1), 16-17.

Federation Cynologique Internationale – American Staffordshire Terrier https://www.fci.be/en/nomenclature/AMERICAN-STAFFORDSHIRE-TERRIER-286.html(accessed 04.01.2023.)

Hale FA. 2005. Juvenile veterinary dentistry.Vet Clin N Am-Small, 35(4), 789-817. https://doi.org/10.1016/j.cvsm.2005.02.003

Harada Y, Ogawa K, Mori SI, Kobayashi S, Kubo H, Kiyosue T. 1989. Variations of dentition in raccoon dogs (Nyctereutes Procynoides Viverrinus T.) Anomalies in number of the teeth. Jpn J Oral Biol, 31(3), 257-64. https://doi.org/10.2330/joralbiosci1965.31.257.

Kuiper JD, van der Gaag I, Mouwen JM. 1982. Polyodontia and abnormal forms of teeth in dogs (author's transl).Tijdschr Diergeneesk, 107(12), 451-7.

Kumar DK, Gopal KS. 2013. An epidemiological study on supernumerary teeth: A survey on 5,000 people. J Clin Diagn Res, 7(7), 1504-7.

Lobprise HB, Dodd JRB. 2019. Wiggs's veterinary dentistry: principles and practice. 2nd ed. USA: John Wiley & Sons.

Mulherin BL, White R. 2021. Unerupted Supernumerary Mandibular Fourth Premolar in a dog. J Vet Dent, 38(3), 152-60. doi:10.1177/08987564211052102.

Nazif MM, Ruffalo RC, Zullo T. 1983. Impacted supernumerary teeth: a survey of 50 cases. J Am Dent Assoc, 106(2), 201-4. doi:10.14219/jada.archive.1983.0390.

Neville BW, Damm DD, Allen CM, Chi AC. 2018. Color atlas of oral and maxillofacial diseases. USA: Elsevier.

Ortner DJ. 2003. Identification of pathological conditions in human skeletal remains. 2nd ed. USA: Elsevier.

Pavlica Z, Erjavec V, Petelin M. 2001. Teeth abnormalities in the dog. Acta Vet Brno, 70(1), 65-72.

Tandir F. 2010. Investigation of dentoalveolar characteristics of normal occlusion of permanent teeth in dogs of the lupoid type. MSc, University of Sarajevo, Veterinary Faculty, Sarajevo, Bosnia and Herzegovina.

BILATERALNI MAKSILARNI PREKOBROJNI SJEKUTIĆI KOD PSA

SAŽETAK

Prekobrojni zubi su kategorizirani uzimajući u obzir zube prisutne u vilici po uobičajenom dentalnom standardu. Nepoznate su etiologije, ali se najvjerovatnijim uzrokom smatraju genetske mutacije. Istraživanja su pokazala prekobrojne zube kod nekoliko pasmina pasa, a obično su povezani sa zbijanjem zuba, malokluzijom i povećanim rizikom od periodontalne bolesti. Prekobrojni zub zahtijeva ekstrakciju ako postane uzrokom zbijanja ili pomjeranja ostalih zuba. Ovaj rad opisuje slučaj bilateralnih maksilarnih prekobrojnih sjekutića kod kućnog ljubimca mužjaka američkog stafordskog terijera koji je upućen na Kliniku za veterinarsku stomatologiju Univerziteta u Sarajevu - Veterinarskog fakulteta.

Ključne riječi: Hiperdoncija, sjekutić, zub