Cumhuriyet Dental Journal

Volume 18 Issue 4

doi: 10.7126/cdj.58140.5000108165

available at http://dergipark.ulakbim.gov.tr/cumudj/

RESEARCH ARTICLE

A retrospective observational study of the frequency of distomolar teeth in a population of 14.250 patients

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ARTICLE INFO

Article history:
Received: 25-Mar-2015
Accepted: 13-Aug-2015

Keywords:
Supernumerary teeth,
Distomolar teeth,
Hyperdontia

ABSTRACT

Objectives: The supernumerary teeth that occur distally to a molar tooth described as "distomolar" teeth. Supernumerary teeth were found more often in the maxilla than in the mandible. They may erupt normally or remain impacted and appear inverted. Distomolar teeth are generally seen smaller than second or third molars and most of them are impacted The aim of this study is to determine the frequency, location, and shape of distomolar teeth in a population of urban Turkish adults.

Material and Methods: A retrospective observational study was conducted on 14.250 patients' panoramic images, with the documentation of demographic data, the presence of distomolar teeth, their number and morphology.

Results: The presence of distomolars in this population was found to be 0.32%. In total, 55 distomolar teeth were detected in 45 patients. All distomolars were found in maxilla and majority of them were impacted (n=51, 92.7% of the distomolars). 19 distomolars were found bilaterally in nine cases (0.06%).

In one patient, two distomolars were detected in the maxilla in which one in left and the other in the right side.

Conclusions: Distomolars, which described as a supernumerary tooth distal to the third molar, are rare occurring dental anomalies. Because of that clinicians should make a careful investigation of panoramic radiographs.

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INTRODUCTION

Supernumerary teeth (or hyperodontia) are described as an excess of the normal teeth number.[1] Supernumerary teeth are most frequently seen in the maxillary anterior and molar regions.[2] Although the aetiology of supernumerary teeth has not yet described completely, some theories were set for this situation such as the phylogenetic reversion theory (atavism), the dichotomy of tooth germ theory, dental lamina activity theory and combination of genetic and environmental factors.[3] Supernumerary teeth have based on three different types of its morphology and described as conical, tuberculate, and supplemental teeth.[4] If supernumerary teeth resemble normal morphology, they are called supplemental teeth. On the other hand, tuberculate type supernumerary teeth are generally rudimentary in shape, are smaller in size, and display more than one cusp.[5,6] The prevalence in primary dentition is between 0.8% and 3.8% of the population reported in the literature.[2,7] The supernumerary teeth that occur lingually or buccally to a molar tooth described as ''paramolar'' teeth.[8,9] In addition, supernumerary teeth, which are situated distally to the third molar, are called ''distomolar'' teeth.[2,10] They may erupt normally or remain impacted and appear inverted. Distomolar teeth are generally seen smaller than second or third molars.[8] and most of them are impacted.[11] Supernumerary teeth were found more often in the maxilla (90%) than in the mandible (10%).[10,12] It has been reported that the most frequent location is the anterior medial region of maxilla, where 80% of all supernumerary teeth.[13] They can be located in the superior distomolar zone, inferior premolar, superior premolar, inferior distomolar, superior canine zone, and inferior incisor, respectively.[2] Supernumerary teeth may cause different local disorders, like retention of the primary tooth, delayed eruption of the permanent tooth, ectopic eruptions, tooth displacements, follicular cysts and other alterations, requiring surgical or orthodontic intervention.[14,15] Although a routine radiological examination can reveal supernumerary teeth, in some cases, they can be overlooked if they are superimposed.[17] Numerous studies have given results for supernumerary teeth in various populations, but there was a few specific study considering distomolar teeth in Turkey. The aim of this present study is to determine the frequency, location, and shape of distomolar teeth in in a population of urban Turkish adults with panoramic radiographies and compare its results with the other studies.

MATERIAL AND METHODS

This observational study was designed as a retrospective assessment of 14.250 patients' panoramic images (6482 Female, 7768 Male) obtained between 2011 and 2014 at the Department of Maxillofacial Radiology of Gulhane Military Medical Academy (GATA), Ankara. Ages of the patients were ranged from 14 to 82. The panoramic images were taken using a Kodak 8000C digital panoramic system at 73 kVp, 12 mA and 13.9 s exposure setting (Eastman Kodak Company, Rochester, NY). Kodak Dental Imaging Software Viewer (version 6.12.10.0) was used for image evaluation. All images were evaluated by a twelve year experienced dentomaxillofacial radiologist (HA) using by 19-inch Dell monitor with a resolution of 1280 x 1024 pixels (Dell, E190S, China) in a dimly lit room. The level of contrast and brightness of the images was left to examiners' choices. Totally 192 panoramic images due to various reasons such as incorrect patient position, ghost images caused by metal artifacts etc. and younger than 18 year old patients were excluded from the study. A total of 14.058 panoramic

images were evaluated. The shapes of distomolar teeth were classified into three different types as conical, tuberculate and supplemental [Figure 1].

All patients' demographic data, the prevalence of distomolar teeth, their number, location and morphology were noted. Descriptive statistics were used for the analysis. All statistical analyses were performed using SPSS for Windows Version 15.0 (SPSS Inc., Chicago, ILL., USA).

RESULTS

Of the 14.058 patients included in the study, 45 were seen to present distomolar teeth (14 female and 31 male), representing 0.32% of the study group. The mean age of the patients with supernumerary teeth was 32.6 years (range 18-58 years). 19 distomolars were found bilaterally in nine cases (0.06%). In one patient, 3 distomolars were detected. 2 distomolars were observed in the left side of the maxilla, whereas 1 distomolar was observed in the right side of the maxilla Figure 2. Distomolar teeth were more common in males than females (68.8% versus 31.2%).

A total of 55 supernumerary teeth were observed and the presence, location, and shape of distomolar teeth were shown in Table 1. 24 distomalar teeth were tuberculated, 22 were conical and 9 were supplemental shaped of all 55 distomolar teeth, respectively. All distomolars were found in the maxilla. Regarding their status within the arch, the great majority (n = 51, 92.7%) were impacted, and only 7.3% (n=4) had erupted and all 55 distomolars were asymptomatic.

DISCUSSION

In this present study, it was found that the prevalence of distomolars was 0,32% in this study group. We noted that only 9 of 45 patients had distomolar teeth bilaterally (0.06%) and also only one patient had 3 distomolars. To our best knowledge this was a rarely seen clinical situation. According the literature, the prevalence of supernumerary molar teeth is 2% of a child population with mixed dentition[16] and Arslan et al.[17] reported the prevalence of distomolars as 0,57% in a population of urban Turkish adults, Gopakumar and colleagues.[18] reported as 0.03% in an Indian population, distomolars were found in 0.26% of a non-sydromatic Turkish subpopulation.[19] The prevalence of distomolar was found as 0.33% in another study of a Turkish population who lives seven different cities.[20] The present study shows nearly same results with other studies which used Turkish populations for distomolar prevalence. The difference of prevalence may be due to the racial differences compared with other studies which made from other countries.

Larger proportion of supernumerary molars were found in the maxilla by some authors in the literature. Grimanis et al.[10] reported the percentage as 79%; Menardia-Pejuan and Berini-Aytes.[12] reported as 86.8%, and Casetta et al.[21] reported as 75%

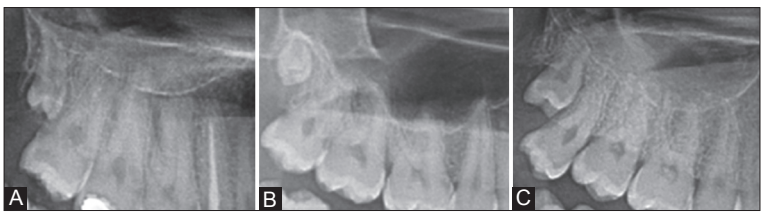

Figure 1. Panoramic appearance of the impacted distomolar teeth shapes. A) conical, B) tuberculate, C) supplemental

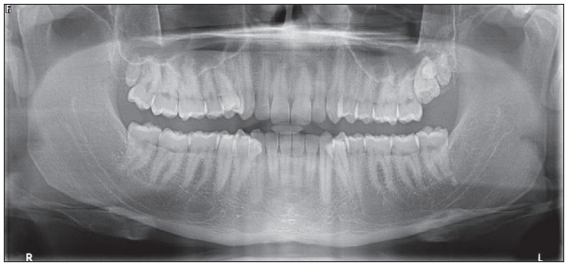

Figure 2. Panoramic radiography of a 26-year-old patient, showing conical three distomolars located bilaterally in the maxilla

in 2001. In the present study all distomolar teeth were found in the maxilla.

51 of 55 were impacted (92.7%) and only 7.3% (n=4) of 55 distomolars had erupted. Arslan et al.[17] found in their study as 20 were impacted of the 29 distomolars. In an another study it was found that 90.8% of the maxillary distomolars and 91.4% of the mandibular distomolars were fully impacted.[20] Kaya et al.[19] found in their study (literature) 25 impacted of 30 distomolars (83.3%). The present study was showed that the rate of impacted distomolars was nearly same with the other studies.

In many studies, it was reported that distomolars are seen more often in males than females. Cassetta.[22] reported that the males to females ratio was 2.5:1. Liu.[23] reported that males were affected as a 3:1 ratio. Ghom.[9] found that distomolars are seen twice as often in males, and Timocin et al.[24] concluded that information. In the present study, distomolar teeth were more common in males (68.8% versus 31.2% in females) as approximately 2:1 ratio like Gopakumar et al.[18] reported.

Most of supernumerary teeth are generally asymptomatic and can be found, during routine radiographic examinations. But sometimes they can lead several pathologies such as tooth displacement, root resorption of the adjacent tooth, cystic formations or when the supernumerary teeth erupt normally they can cause dental caries or periodontal diseases.[25-27] In our study we found that all distomolars are asymptomatic at the admission and they did not cause any pathologic changes. Some authors have recommended surgical removal of supernumerary teeth for the treatment.[28] On the other hand the authors of the present study thought that following up regularly with radiographs is the best choice if supernumerary teeth do not lead any clinical and pathologic conditions. Some radiographic techniques can be used for investigation of the supernumerary teeth such as intraoral radiographic techniques, occlusal or panoramic radiography and CBCT.[29] In the current study panoramic x-ray examination was the tool to diagnose the distomolar teeth.

The distomolars in the present study exhibited three different forms: 1) conical, 2) tuberculate and 3) supplemental shape. Tuberculate and conical shaped distomolars were found in nearly equal ratios. Despite Kara.[20] reported that conical shape appeared commonly; Casetta et al.[21] found that 8 of 13 supernumerary molars were tuberculated, and 5 were conical in shape in their case series. They found that the tuberculate shape was the most common shape in their study.

CONCLUSIONS

This study profiled the demographic data as well as the location, impaction and shape of the distomolar teeth found by using panoramic radiography with a large population in urban Turkish adults. Distomolars are rarely seen supernumerary teeth, they commonly occure in the maxilla and generaly are unilateral. They are much more seen in males than females as 2:1 in Turkish population. Further epidemiologic studies are needed to explain the frequencies, prevalence of distomolar teeth among different populations.

Table 1. Distribution of patients with distomolars, showing the distomolar positions and locations

Gender	Age	Quadrant	Shape	Number of distomolar teeth	Impacted/ erupted (I/E)
M	22	Maxillary bilateral	Tuberculate	2	I
M	24	Maxillary right	Tuberculate	1	I
M	21	Maxillary right	Tuberculate	1	I
M	34	Maxillary left	Tuberculate	1	I
M	36	Maxillary left	Conical	1	I
M	28	Maxillary left	Supplemental	1	I
M	32	Maxillary left	Supplemental	1	I
M	25	Maxillary left	Supplemental	1	I
M	34	Maxillary bilateral	Tuberculate	2	I
F	41	Maxillary right	Conical	1	I
M	20	Maxillary left	Conical	1	I
F	48	Maxillary right	Conical	1	I
M	32	Maxillary right	Tuberculate	1	I
F	23	Maxillary left	Tuberculate	1	I
M	38	Maxillary right	Tuberculate	1	I
M	22	Maxillary left	Supplemental	1	I
M	42	Maxillary left	Supplemental	1	I
F	56	Maxillary right	Conical	1	I
M	25	Maxillary left	Conical	1	I
F	27	Maxillary right	Tuberculate	1	I
M	21	Maxillary right	Supplemental	1	I
F	29	Maxillary bilateral	Conical	2	Left-i/right-e
M	32	Maxillary right	Conical	1	I
F	17	Maxillary left	Tuberculate	1	I

(Cond...)

Table 1. *(Continued...)*

M	51	Maxillary right	Conical	1	E
F	16	Maxillary right	Conical	1	I
M	24	Maxillary right	Conical	1	I
M	26	Maxillary bilateral	Conical	3	I
F	19	Maxillary bilateral	Tuberculate	2	I
F	27	Maxillary right	Tuberculate	1	I
F	34	Maxillary left	Conical	1	E
M	58	Maxillary left	Conical	1	E
M	28	Maxillary left	Tuberculate	1	I
M	15	Maxillary left	Supplemental	1	I
F	31	Maxillary bilateral	Tuberculate	2	I
M	32	Maxillary right	Tuberculate	1	I
M	43	Maxillary left	Supplemental	1	I
F	27	Maxillary right	Tuberculate	1	I
M	35	Maxillary bilateral	Conical	2	I
M	38	Maxillary left	Conical	1	I
F	26	Maxillary left	Tuberculate	1	I
M	49	Maxillary left	Supplemental	1	I
M	19	Maxillary bilateral	Tuberculate	2	I
M	42	Maxillary left	Tuberculate	1	I
M	46	Maxillary bilateral	Conical	2	I

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How to cite this article: Kurt Hakan, Suer Berkay Tolga, Senel Buğra, Avsever Hakan. A retrospective observational study of the frequency of distomolar teeth in a population of 14.250 patients. Cumhuriyet Dent J 2015;18(4):335-342.