INCIDENCE OF IMPACTED TEETH - A RADIOGRAPHIC STUDY

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Keywords: *tooth abnormalities, impacted tooth, panoramic radiography*

Abstract: *Aim: the aim of this study is to study the tooth impaction given the high frequency of dental anomalies of position. Material and Method: we studied the records and orthopantomography x-rays of 685 patients, who presented to Pediatric Dentistry and Orthodontics Department in Tîrgu-Mureş, between 2005-2013. Results: after applying the exclusion criteria, there remained 149 patients, with tooth impaction, with ages between 10 and 18 years. The frequency of dental inclusion in the dental support area has the highest rate in the 12- 14 years age group. There were more cases of total maxillary (112) impacted teeth than total mandibular impacted teeth (74). Conclusions: the most frequently impacted teeth were the canines, and dental inclusion is more common in females than in males.*

Cuvinte cheie: *anomalii dentare, incluzie dentară, radiografie panoramică*

Rezumat: *Scop: obiectivul acestui studiu este de a studia incluziile dentare, având în vedere frecvența mare a anomaliilor dentare de poziție. Material și metodă: am studiat fișele și ortopantomogramele a 685 de pacienți, care s-au prezentat la Clinica de Pedodonție și Ortodonție din Tîrgu-Mureș, între 2005-2013. Rezultate: după aplicarea criteriilor de excludere au rămas 149 de pacienți cu incluzii dentare, cu vârste cuprinse între 10 și 18 ani. Frecvența de incluzii dentare în zona de suport este cea mai mare la grupa de vârstă 12- 14 ani. Au existat mai multe cazuri de incluzii la arcada superioară (112), față de cele de la arcada inferioară (74). Concluzii: incluziile cele mai frecvente au fost de canini, incidența cea mai crescută de incluzii având-o copiii de sex feminin.*

INTRODUCTION

Impacted tooth is the term used to describe the impossibility of a dental tooth to erupt due to a physical barrier or a vicious position of the tooth within the jaw bone. The most common inclusions are observed at the third molar, followed by the upper canine and lower second premolar.(1)

A number of systemic diseases may be associated with impacted teeth: rickets, malnutrition, metabolic disorders, cleidocranial dysostosis, avitaminosis D, labio-maxillo-palatal cleft, heredity.(2) As causes of impacted teeth can be mentioned: reducing the space on the arch due to its insufficient development, macrodontia, obstacles in the eruption posed by supernumerary teeth, dense and hard covering fibrous mucous, cysts, tumours (odontomas, adamantinomas).(3-6) From all the dental position anomalies, impacted tooth is the most common. Relating to the children sex, Kim Y et al. observed a prevalence of 1.5 times higher in females than in males and reported a 3 times higher incidence of vestibular impaction compared with the palatal impaction.(7)

PURPOSE

The aim of this study is identify the incidence of the impacted teeth with eruptive etiology among children due to high frequency of dental anomalies of position.

METHODS

We conducted a retrospective longitudinal study in the period 2005-2013. Data were collected from the medical records and panoramic radiographs of 685 patients who presented to the Pedodontics - Orthodontics Clinic, in Tîrgu-Mureş, in the studied period.

Selection of the patients

Inclusion criteria:

- Patients with mixed and permanent dentition, aged between 10 and 18
- The existence of good quality panoramic radiographs
- Etiologic diagnosis certifying the cause of the impacted teeth
- No history of orthodontic treatment

Exclusion criteria:

- Patients with craniofacial syndromes and labio-maxillo-palatine clefts
- Maxillary and mandibular third molar inclusion
- Dentoalveolar trauma
- Maxillary bone fractures

After applying the exclusion criteria in study remained 149 patients.

For data analysis there were used elements of descriptive and inferential statistics (chi square test) and for value p was chosen the significance level of 0.05. Statistical analysis of data was performed using Microsoft Excel.

RESULTS

A high frequency of dental inclusions was observed in the upper arch compared with the lower arch, but the difference was not statistically significant. The highest

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frequency of dental inclusions was observed in 12-14 years age group, followed by 15-17 years age group and 18 years age group (table no. 1).

Table no. 1. The frequency of dental inclusion regarding age groups and position

Dental inclusions p=0,7073	12-14 years	15-17 years	18 years	Total
Lower jaw dental inclusions	50	14	10	74
Upper jaw dental inclusions	74	26	12	112
Total	124	40	22	186

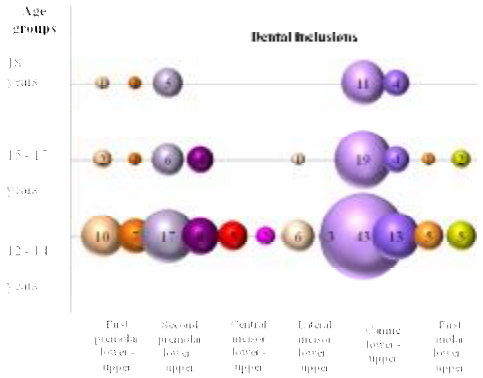
Regarding the arch area, any tooth can be impacted. In this study, was noticed that the canine was the most commonly impacted tooth, followed by premolar, incisor, and molar (table no. 2).

Table no. 2. Frequency of dental inclusion regarding the arch areas and age groups

Inclusions / Teeth p=0,1204	12-14 years	15-17 years	18 years	Total
Premolar	42	13	7	62
Incisor	16	1	0	17
Canine	56	23	15	94
Molar	10	3	0	13
Total	124	40	22	186

Relating to the position on the arches (upper or lower jaw) was noticed that the upper canine has the highest frequency of impaction, followed by the lower second premolar, lower canine, lower first premolar, upper second premolar, upper first premolar, upper lateral incisor, lower first molar, upper molars, upper central incisor, lower lateral incisor and lower central incisor inclusions. The results were not statistically significant (p = 0.8194).We did not find a single case of an impacted second molar (figure no. 1).

Figure no. 1. Dental inclusions regarding teeth and age groups



The study of impacted teeth regarding sex, was observed a higher number of inclusions in female (60.21%) compared to male (39.79%) (p = 0.6592) (figures no. 2, 3).

Figure no. 2. The frequency of dental inclusions regarding sex

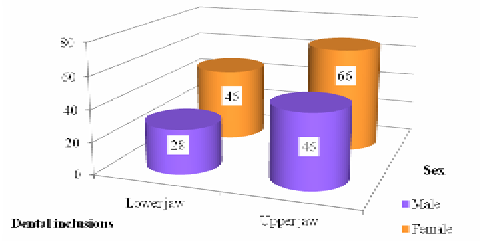
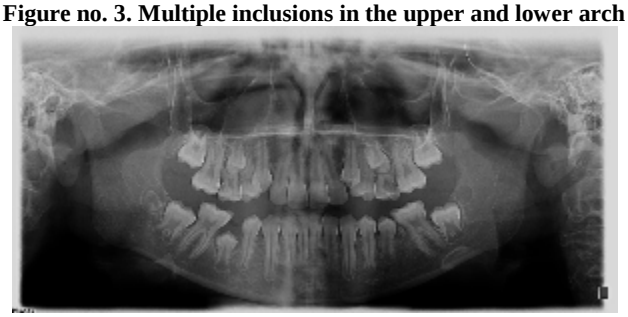


Figure no. 3. Multiple inclusions in the upper and lower arch



DISCUSSIONS

In the last decades, the chronology of the eruption of the temporary dentition, especially the permanent dentition, went through a series of changes due to food refining process leading to a low content in fibres. Another cause for these changes is the young generation eating habit, who prefer a fast food type diet, eliminating the fresh fruits and vegetables that determine a physiological dental attrition, leading to physiological risalisis.

Abnormalities in teeth position, especially dental inclusions, have a high frequency among children. The causes are some modifications that occur during the embrionary stages of teeth development and the ambiental factors.(8) It is essential to detect this anomaly as soon as possible, to prevent the appartion of other associated anomalies and to establish a proper treatment plan.(9)

This study shows a high frequency of upper canine inclusions, followed by lower second premolar and lower canine inclusions.

In a study on the population in northern Greece was reported similar data, showing that the highest incidence of inclusions was at canine level (59.6%), followed by inclusions at premolar (19.1%), and at molar level (6.2%).(10)

In the present study, the results showed a higher frequency of the dental inclusion in female, compared with male, similar results was reported by a study conducted in India, which relating to the canine inclusion incidence regarding sex, showed a higher incidence among females (3.6%) compared to males (2.6%).(11)

Considering the distribution of dental inclusions on the arcades, was observed a higher frequency of inclusions in upper versus lower arch. Also, upper canine had the highest frequency followed by the lower canines and premolars. Similar results were reported in a study conducted in Turkey, in which the authors concluded the same thing.(12)

After studying the panoramic x-rays, Nazir et al. reported a higher prevalence of dental inclusions in the lower jaw compared with the upper jaw, different results than obtained in the present study. Also the study conducted by Nazir et al. revealed that ectopy is more common in females and in the upper arch.(13) Also, Sajnani et al. (14), studying the prevalence of canine inclusions in Chinese children, have reported a prevalence of 2.1%, much lower than the results shown in this study.

Chawla et al., in a study on the frequency of dental inclusion, showed a higher prevalence of upper canine inclusion compared to the lower canine, similar results observed in the present study. Also in the same study, the authors reported a higher frequency of palatal impaction of the upper canines, compared with the lower canines, which presented a predominantly vestibular impaction, results statistically significant.(15) As side effects of canine impaction, a study (16) reported the root resorption of the adjacent teeth (lateral and central incisor). In a study (17) regarding canines inclusions,

using computed tomography (CT) scans, there was noticed that the lateral incisors root were severe resorbed in 12.6% of the cases, the first premolars root in 4.8% of the cases and the central incisors roots in 2.1% of the cases.

CONCLUSIONS

1. From all the dental inclusions noticed in this study, the highest incidence was reported in the upper canine, followed by the lower second premolar, lower canine, and last, lower central incisor.
2. Dental inclusions in the upper arch are more frequent in the lower arch.
3. Dental inclusions are more frequent in females than males.
4. Regarding the support area, the majority of dental inclusions cases were observed in the 12-14 years age group, followed by the 15-17 years and 18 years age groups.
5. The diagnosis and the treatment plan rely on early findings, based on x-rays, of the possible dental inclusions.

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