

Frequency of Lesions Associated with Impacted Teeth in Patients Referring to the Department of Oral Pathology, Tabriz Faculty of Dentistry from 2004 to 2013 and Its Relationship with Age, Gender, Location and Type of Lesion

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Abstract

Introduction: The crown of an impacted tooth is surrounded by the dental follicle. If such teeth remain impacted, the follicular sac, too, will be preserved. Although the dental follicle preserves its original size in the majority of patients, in some individuals it might undergo cystic changes and become tumoral, resulting in the formation of cysts and odontogenic tumors in the jaws. Different references have reported different frequency rates for such lesions. The aim of the present study was to evaluate lesions associated with impacted teeth in terms of age range, gender and the location of these lesions in patients referring to the Department of Oral and Maxillofacial Pathology, Tabriz Faculty of Dentistry.

Materials and methods: In the present retrospective analytical/descriptive study, all the files of patients with odontogenic lesions in their impacted teeth, who had referred to the Department of Oral and Maxillofacial Pathology, Tabriz Faculty of Dentistry, from 2004 to 2013, were reviewed. Data were analyzed with descriptive statistics and chi-squared test using SPSS 15.

Results: In the present study, of 1050 patient files evaluated, 33 cases (2.88) exhibited lesions associated with impacted teeth. The most frequent lesion was dentigerous cysts with a frequency of 51.5%, followed by odontogenic keratocyst with a frequency of 24.2%. The least frequent lesion was AOT (3%). The majority of the lesions occurred during the third decade of life. In relation to location, upper canine and lower third molar areas exhibited the highest frequencies of lesions.

Conclusion: If a tooth does not erupt at its usual time, it is necessary to evaluate the reasons for its failure to erupt. The results of the present study showed a higher frequency of lesions associated with impacted teeth.

Key words: Frequency, Impacted teeth, lesions.

Introduction

Tooth eruption is a continuous process that comprises of the movement of tooth from its location of development to its location of function (1). A part or the whole of an impacted tooth is located within bone or soft tissue or behind another tooth. An impacted tooth cannot appear in the dental arch at the expected time due to the cessation of its eruptive movements. The most frequently impacted teeth in descending order are mandibular third molars, maxillary canines, mandibular premolars, mandibular canines and maxillary premolars (2).

Tooth eruption is impeded by local or systemic factors. Local factors consist of mechanical blockage (by a supernumerary tooth, a cyst or a tumor) and an inadequate space in jaws; systemic factors consist of genetic disorders, endocrine disorders, and radiation of the jaws (3).

The crown of an impacted tooth is surrounded by the dental follicle and the follicle persists with the persistence of impaction. In many subjects the follicle does not exhibit any change in its size but in some it might experience cystic degeneration and turn tumoral, giving rise to odontogenic cysts and tumors on the jaws (4,5).

Odontogenic tumors associated with impacted teeth include ameloblastoma, Pindborg tumor and odontoma; odontogenic cysts associated with impacted teeth include dentigerous cyst, odontogenic keratocyst and calcifying odontogenic cyst (6).

Jaw lesions are of utmost importance due to the skeletal deformities and disfigurement that they cause, including anesthesia, problems in deglutition and the risk of death, especially in malignant cases. Therefore, it is necessary to gain knowledge on the epidemiology, reach early diagnosis and render rapid treatment (7).

Given the importance of these lesions due to the deformity and complications they induce, various studies have evaluated the frequencies of these lesions. A study by Curan et al reported a prevalence rate of 8.4% for lesions associated with impacted teeth (8). In addition, a study by Sagharvanian et al showed a prevalence rate of 52.6% for cystic lesions and tumoral odontogenic lesions associated with impacted teeth (2). Güven et al (2000) reported prevalence rates of 2.31% and 0.79% for cysts and tumors associated with impacted third molars, respectively (9). As discussed above, different references have recorded different statistics about the prevalence of these lesions. Knowledge about the prevalence of different lesions and their clinical features, including age, gender and location, is of utmost importance for clinicians for correct and early diagnosis. Studies can help reach an early diagnosis of these lesions and render treatment as fast as possible to prevent further complications in patients. The aim of the present study was to evaluate lesions associated with impacted teeth in terms of age range, gender distribution and location of lesions in patients referring to the Department of Oral and Maxillofacial Pathology, Tabriz Faculty of Dentistry.

Materials and Methods

In the present descriptive/analytical study, the study subjects consisted of samples sent to the Department of Oral and Maxillofacial Pathology, Tabriz Faculty of Dentistry, for diagnosis and microscopic evaluations from March 2004 to March 2011.

All the samples were evaluated using the census technique. After selecting the patient files, all the necessary information, including age, gender, location of the lesion and microscopic diagnosis of the lesion, was recorded in data sheets and then the prevalence of odontogenic tumors in the maxillofacial region was evaluated in terms of age, gender and the location of the lesion, in addition to the tumor type. The files that

were incomplete in terms of patient data and the definitive diagnosis of the lesion and the files with tumor recurrence were excluded from the study. Data were analyzed with descriptive statistics (including means and standard deviations, frequencies and percentages) and chi-squared test with the use of SPSS 15. Statistical significance was set at $P < 0.05$.

Ethics Considerations

In the present study, all the ethical issues in relation to the documents and patient data were observed. The protocol of the study was approved under the code 1181.

Results

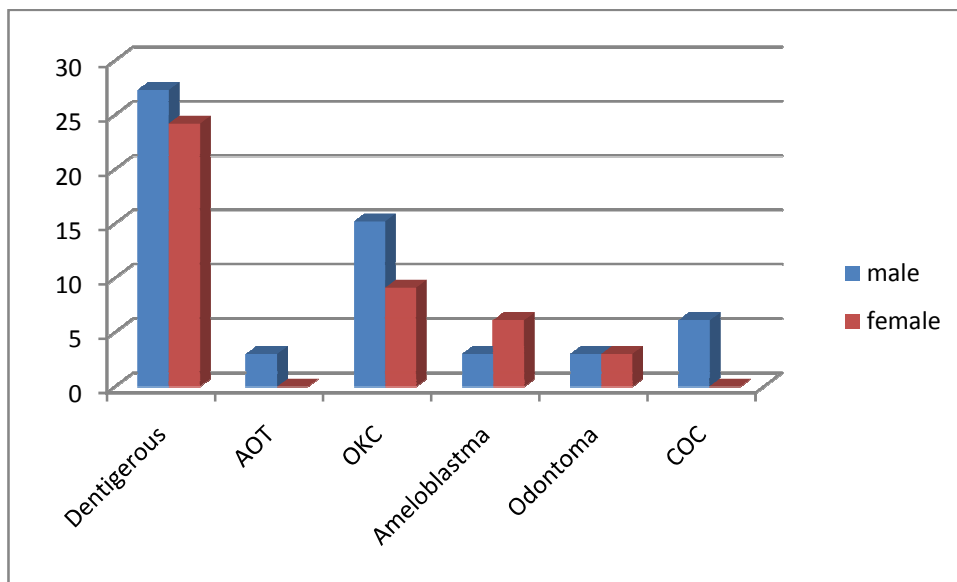
Of 1050 patient files evaluated, there were 33 cases of lesions associated with impacted teeth, with 19 cases (57.6%) in males and 14 cases (42.4%) in females. The mean age of the subjects was 25.3 ± 10.6 years, with an age range of 10–46 years. The means and standard deviations of ages of female and males subjects were 23.9 ± 11.1 and 24 ± 10.4 years, respectively, with no significant differences between males and females.

Table 1 presents the frequencies and percentages of different lesion types. The most frequent lesion was dentigerous cyst with a prevalence rate of 51.5%

Table 1. Frequencies and percentages of different lesions

Lesion type	Frequency (%)
Dentigerous	17(51.5)
AOT	1(3)
OKC	8(24.2)
Ameloblastoma	3(9.1)
Odontoma	2(6.1)
COC	2(6.1)

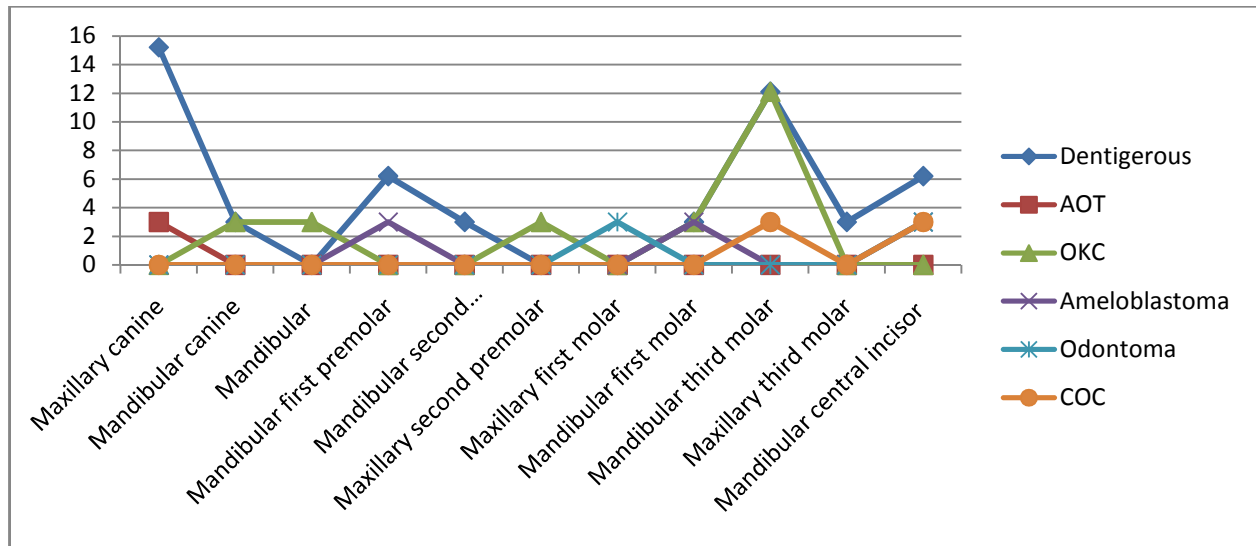
Graph 1 presents the frequencies of different lesions in males and females. There was no significant relationship between the lesion type and patient gender.



Graph 1. The bar graph of the frequencies of different lesions in males and females.

The most frequent lesions in the samples were detected in the 21–30-year age group with 12 lesions and the least frequent lesions were detected in the 0–10-year age group with 2 cases. There was no significant relationship between lesion type and patient age.

Graph 2 presents the frequencies of lesions in terms of lesion location. In this context, the upper canines and lower third molars were associated with the highest rates of lesion frequencies, respectively. There was no significant relationship between lesion type and lesion location.



Graph 2. Frequencies of different lesions in terms of lesion location.

Discussion

Different studies have reported different prevalence rates for the association of pathologic lesions with impacted teeth in terms of geographical location, gender and ethnicity. In the present study, consistent with previous studies, the most frequent lesion associated with impacted teeth was the dentigerous cyst (10). Koseoglu reported a prevalence rate of 28.4% for this lesion among lesions associated with impacted teeth (11); however, in the present study dentigerous cyst had a frequency of 51.5%. In addition, OKC ranked the second with a frequency of 24.2% among these lesions. In the present study, the least frequent lesion was AOT with 3%. In addition, the results of the present study showed that the majority of lesions were seen in individuals 25 years of age. The third decade of life was the most common decade for this lesion, consistent with the results of other studies (10,12). The first decade of life was the second most common decade for this lesion, consistent with the results of other studies.

On the other hand, a higher prevalence rate of dentigerous cyst in association with the mandibular third molar has been reported by many studies (10,13). There was no significant relationship between the lesion type and the lesion location in the present study, consistent with the results of some studies (13,14). However, a study by Regezi showed the second rank for the prevalence of the maxillary third molar (15). Studies have reported varying frequency rates for OKC in association with impacted teeth, i.e. 25, 40%. A study in the University of Mississippi showed that this lesion comprised 2.68% of the lesions associated with impacted teeth (11); however, in the present study, its frequency was 20%. Consistent with results of some other studies (10,14), in

the present study the most common location for OKC was the mandibular third molar, with a predilection for males. The results of the present study are consistent with Neville's report that OKC has a slight predilection for males and is mainly detected in the posterior mandible (6). In addition, OKC, with a frequency of 24.2%, was the second most frequent lesion. The least frequent lesion in the present study was AOT with one case (3%). Based on some references, COC associated with impacted teeth comprises 32% of all the COC cases (16). In a study by Lucas, of 11 cases of COC, 7 were associated with impacted teeth (17). Some researchers believe that the frequency of COC in the maxilla is similar to that in the mandible (10,13); however, Lucas believes its associations with impacted teeth is more frequent.(17) In the present study, its frequency was higher in the mandible. Evaluation of the frequencies of lesions in terms of gender in the present study showed that dentigerous cyst was the most frequent lesion in both genders, with no significant relationship between the lesion frequencies and the patients' age and gender. Although some researchers do not believe in any gender preference, some others believe that COC has a predilection for females (12,13).

Consistent with the majority of previous studies, the most frequent location for ameloblastoma in association with an impacted tooth in the present study was the posterior mandible. In the present study, the frequency of ameloblastoma in males was twice that in females, which is somehow consistent with Lucas's (17) report that it is 2.4 folds more common in males compared to females. However, based on a report by Regezi, this lesion does not exhibit any gender predilection (15). The majority of references have mentioned that the 4th decade of life is the most common decade for the incidence of this lesion but in the present study, the third decade of life was more frequent, followed by the second decade of life (13). All the studies have reported that AOT mainly occurs in the anterior maxilla (10,12,13), as confirmed by the results of the present study. However, a higher frequency of this lesion in males in the present study is not consistent with the results of some studies reporting a higher frequency in females (10,14). The most common decades of life for the incidence of this lesion have been reported to be the second and third decades (18), consistent with the results of the present study. The least frequent lesion in the present study was AOT with one case (3%).

Finally, it should be pointed out that it appears if a tooth does not erupt past its usual eruption time, it is necessary to evaluate the reason why it has not erupted. The results of the present study showed a high frequency of association of lesions with impacted teeth.

Conclusion

It was concluded based on the results of the present study that:

1. The most frequent lesion was dentigerous cyst with a frequency of 51.5%, followed by OKC with a frequency of 24.2%. The least frequent lesion in the present study was AOT with a frequency of 3%. In addition, the majority of lesions were detected in the third decade of life.
2. The upper canine and lower third molar areas were the most frequent locations for lesions.

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