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Original Research Article

Prevalence of Impacted Canine Teeth in College of Dentistry, King Khalid University - A Retrospective Study

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ABSTRACT

An impacted tooth is "a tooth that cannot, or will not, erupt into its normal functioning positions, and is, therefore, pathologic and requires treatment". Any permanent tooth in the dental arch can be impacted, but the teeth most frequently involved in a descending order are the mandibular and maxillary third molar, the maxillary canines, the mandibular and maxillary second premolar, and maxillary central incisors. The frequency of maxillary canine impaction is significantly higher than that of mandibular canines. Most common indications for the removal of impacted canines among individuals include aesthetics and correction of malocclusion. Moreover, data regarding the prevalence of impacted canine teeth and the role of various factors influencing the morbidity associated with these teeth among Saudi population has not yet been established. The purpose of this study was to report the prevalence of impacted canine teeth among Saudi population reporting to the College of Dentistry, King Khalid University, Abha, Kingdom of Saudi Arabia.

Keywords: Impacted Teeth, Canine Teeth, Maxilla, Mandible

INTRODUCTION

Tooth impaction is a frequent phenomenon. [1,2] An impacted tooth is one that is erupted, partially erupted, or unerupted and will not eventually assume a normal arch relationship with the other teeth and tissues. [3] Local factors include crowding, ectopic position of the tooth germ, supernumerary teeth, and soft tissue or bony lesions contribute to tooth impaction. Maxillary canine teeth are the more frequently impacted teeth as compared in the mandibular canine teeth. [3,4] Many theories have been proposed to explain the incidence of impacted canine teeth. The prominent among these are mendelian theory, phylogenic theory and orthodontic theory. Most of these theories stress on the discrepancy of jaw size to the tooth size which further has been related to the dietary habits and varied from one region to the other.

Considerable variation has been reported in the prevalence and distribution of impacted teeth in different regions of the jaw**.** Factors affecting the prevalence include the age, timing of dental eruption, and the radiographic criteria for dental development and eruption. [1] Moreover, to our knowledge data regarding the prevalence of impacted canine teeth and the role of various factors influencing the morbidity associated with

these teeth among Saudi population is scarce. The purpose of this study was to report the prevalence of impacted canine teeth according to the age, gender and type of impaction among Saudi population who reported to the College of Dentistry, King Khalid University, Abha, Kingdom of Saudi Arabia.

MATERIALS AND METHODS

This retrospective study involved 3800 panoramic radiographs of subjects aged 18 to 45 years who had presented to the College of Dentistry, King Khalid University, Abha, Kingdom of Saudi Arabia, for oral care during the period from February 2009 to February 2011. All panoramic radiographs were taken with standardized equipment and specifications. The tooth was considered impacted when it was not aligned with the rest of the teeth in either of the dental arches. Data regarding age, sex, number of impacted teeth, arch involved, and type of impaction were obtained from patients' records and panoramic radiographs were examined by a single investigator.

The angulation of impacted third molar was recorded based on pell and Gregory classification with reference to the angle formed between the intersected longitudinal axes.

Data collected was entered into a spreadsheet (Excel 2000; Microsoft, US) and analyzed subsequently using Statistical Package for Social Sciences (SPSS) version 16.0. The prevalence of impacted canine teeth in relation to age, gender and type was assessed and displayed by frequency and percentage. The p value was analyzed by using the Pearson Chi-square test.

RESULTS

The study sample comprised of 3800 panoramic radiographs. A total of 55 impacted canine teeth were identified (1.44%) (Table 3).The male to female ratio with impacted canine teeth is 43:12 (3.58:1) and the ratio for patients with impacted teeth was (69:1). Age group 1 (i.e., 20 to 25 years)(Table 3) had the highest prevalence (Table 4) of impacted canine teeth (63.63%) and this decreased with increasing age.

Of the 55 impacted canine teeth, maxillary canine teeth were most commonly encountered (94.54%), followed by impacted teeth in mandibular arch (5.5%) (Table 1) and its prevalence shown in Table 2. The ratio of maxillary to mandibular canine teeth impaction was 17.33:1.

In both males and females, the impacted canine teeth were more prevalent in maxillary arch (78.18% and 28.1%) (Table 1) with a p value of 0.003.

Table 1: Impaction Occurrence According To Gender

Gender	Impaction Occurrence			Total
	Maxillary	Mandibular	Both the Arches	
Male	40	3	0	43
	93%	6.9%	0%	100.0%
Female	12	0	0	12
	100%	0%	0%	100.0%
Total	52	3	0	55
	94.5%	5.45%	0%	100.0%

Table 2: Prevalence p Value (Impaction Occurrence According To Gender)

	Value	df	Asymp. Sig. (2-sided) (p value)
Pearson Chi-Square	19.774(a)	6	0.003

Table 3: Impaction Occurrence According To Age Group

Age Group	Impaction Occurrence			Total
	Maxillary	Mandibular	Both the Arches	
1 (20-25 years)	32	3	0	35
	91.4%	8.6%	0%	100.0%
2 (26 -30 years)	7	0	0	7
	100%	0	0%	100%
3 (31 -35 years)	9	0	0	9
	100%	0%	0%	100.0%
4 (36 – 40 years)	4	0	0	4
	100%	0%	0%	100.0%
Total	52	3	0	55
	94.5%	5.5	0%	100.0%

Table 4: Prevalence p Value (Impaction Occurrence According To Age Group)

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.692(a)	2	0.707 (Non significant)

DISCUSSION

An impacted tooth is "a tooth that cannot, or will not, erupt into its normal functioning positions, and is, therefore, pathologic and requires treatment". [4] Any permanent tooth in the dental arch can be impacted, but the teeth most frequently involved in a descending order are the mandibular and maxillary third molar, the maxillary canines, the mandibular and maxillary second premolar, and maxillary central incisors. [6] The mandibular third molars are the most frequently impacted teeth in the human and surgical extraction has become one of the most common dentoalveolar surgeries. [7] The many kinds of impaction include vertical, horizontal, buccal, lingual and even inverted impaction. The etiology of impaction is multifactorial. [8] Impacted teeth may be associated with periodontal disease, dental caries, odontogenic cyst and tumors, pain of unexplained origin, jaw fracture, and resorption of root of the adjacent tooth. [9]

This retrospective study to assess the prevalence of impacted canine teeth among Saudi population included 3800 patient's panoramic radiographs. To ensure diagnostic validity in this study, radiographic findings were verified with clinical records, which were collected on standard forms as part of routine examination process. A total of 55 (1.44%) patients had impacted canine teeth with a p value of 0.003(p=0.003) which is statistically significant. Haider and Shalhoub [10] conducted a similar study among Saudi population and reported a prevalence of 34% and 29% of impacted third molars for males and females respectively which is contrary to our results. Ioannis G *et al.,* [2] in their retrospective study for Greek population reviewed 425 patients with impacted teeth and reported a prevalence rate of 0.001(p=0.001). FCS Chu *et al.,* [1] conducted a retrospective study among Hong Kong Chinese population which included 7486 patients and reported 28.3% prevalence of impacted third molars. Alexander T [11] *et al.,* reported a similar prevalence rate of 27.8% among Hong Kong population.

The male to female ratio with impacted canine teeth was 43:12 (3.58:1) and the ratio for patients with impacted teeth was (69:1). The results in this study for the male to female ratio of impacted canines is quite similar to that conducted by Ioannis G *et* al., [2] (p=0.651). In the study conducted by Mwaniki D *et al.,* [5] for incidence of impacted mandibular third molars among dental patients in Nairobi, Kenya , the men to women ratio was 7:5.Age group 1 (i.e., 20-25 years age)had the highest prevalence of impacted canine teeth (63.63%) and this decreased with increasing age.

Similar to other studies [2] and as widely stated in the literature, [4,12] the prevalence of impacted canine teeth was much higher in the maxillary arch as compared to mandibular arch (94.5% & 5.5%) in our study. In both males and females, the impacted canine teeth were more prevalent in maxillary arch (78.18% and 28.1%). Even with regard to the age group, the maximum prevalence of impacted canine teeth was in the maxillary arch in any of the age group in this study. The ratio of maxillary to mandibular impacted canine teeth was 17.33:1.

There are various theories widely stated in the literature to explain the development of impacted teeth. One among them, The Belfast Study Group specifically explains the development of type of impaction. According to them, there may be differential root growth and pressure which causes the root to either remain mesially inclined or rotate to a vertical position depending on the amount of root development.

CONCLUSION

1. A total of 55 impacted canine teeth were identified in 3800 Orthopantomograms
2. Males had higher prevalence of impacted canine teeth
3. Maxillary arch had higher prevalence of impacted canine teethy
4. Age Group 1 (20-25 years) had higher prevalence of impacted canine teeth.

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