

Prevalence of Impacted Pre-Molar Teeth in College of Dentistry, King Khalid University, Abha, Kingdom of Saudi Arabia

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Abstract:

Background: An impacted tooth is one which fails to reach the occlusal plane even after two-third's of its root completion. Though the etiology is multi-factorial, most common reason is crowding of teeth with lack of space for eruption. Mandibular third molars are the most commonly impacted teeth. Very few studies have been done to assess the prevalence of impacted premolar teeth.

Materials and Methods: This study had been undertaken at College of Dentistry, King Khalid University, Abha, Kingdom of Saudi Arabia to report the prevalence of impacted premolar teeth and its relation to age group and gender. This retrospective study involved 3800 panoramic radiographs of subjects aged 18-45 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.

Results: The study sample comprised of 3800 panoramic radiographs. A total of 45 impacted premolar teeth were identified (1.2%) ($P=0.89$). The male to female ratio with impacted premolars was 35:10 (3.5:1). Age Group 1 (i.e., 20-25 years) had the highest prevalence of premolar tooth impaction (75.5%) and this decreased with increasing age. Of the 45 impacted premolars, mandibular premolars were most commonly encountered (75.6%), followed by impacted teeth in the mandibular arch (24.4%). The ratio of mandibular to maxillary third molar impaction was 3:1.

Conclusion: (1) The prevalence of impacted premolar teeth is more in mandibular arch than in the maxillary arch, (2) females had higher prevalence of impacted teeth than men, (3) age group 25-30 years had high rate of prevalence of impacted premolars.

Key Words: Eruption, impacted teeth, premolar

Introduction

An impacted tooth is one that fails to erupt into the dental arch within the expected time.¹ Eruption of a tooth may be obstructed by adjacent tooth, dense bone or soft tissue and therefore may also cause impaction.

The impaction of permanent teeth usually concerns the maxillary or mandibular third molars. Impacted premolars are not frequently described in the literature.

The etiology of impaction of teeth other than the third molars is poorly defined.² Intrusive trauma may cause impaction especially when the periodontal ligaments are extensively damaged and is common in the anterior segment. Fortunately, in young children, most teeth will re-erupt. Eruption of a tooth may be obstructed by adjacent tooth, dense bone or soft tissue and therefore may also cause impaction. Crowding in the buccal segment may be due to tooth/arch size discrepancy or to the early loss of deciduous second molars wherein no space maintainer is placed. This leads to insufficient space for the second premolars to erupt within the confines of the arch. Consequently, the second premolar usually erupts in a palatally or lingually displaced position, or it may become impacted. The same is true in cases where there is an over-retained deciduous molar.

Consequently the premolar may either erupt ectopically or not erupt at all and become impacted. Impacted teeth may be associated with periodontal disease, dental caries, odontogenic cyst and tumors, pain of unexplained origin, jaw fracture, and resorption of the root of the adjacent tooth.

Materials and Methods

This retrospective study involved 3800 panoramic radiographs of subjects aged 18-45 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.

Data collected were 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 premolars in relation to age, gender and type was assessed and displayed by frequency and percentage.

Results

The study sample comprised of 3800 panoramic radiographs. Age Group 1 (i.e., 20-25 years) (Table 1 and Graph 1) had the highest prevalence of premolar tooth impaction (75.5%) and this decreased with increasing age. A total of 45 impacted premolar teeth were identified (1.2%) ($P = 0.89$) (Table 2 and Graph 2). Males had a higher prevalence of impacted premolars

than females (75% and 25%). The male to female ratio with impacted premolars was 35:10 (3.5:1).

Of the 45 impacted premolars, mandibular premolars were most commonly encountered (75.6%), followed by impacted teeth in the mandibular arch (24.4%) [Table 1]. The ratio of mandibular to maxillary third molar impaction was 3:1.

In both males and females, the impacted premolars were more prevalent in the mandibular arch (57.7% and 17.7%).

Table 1: Relation of age group to impaction occurrence.

Age group	Impaction occurrence		Total
	1 Maxilla	2 Mandible	
1 (20-25)	9	25	34
2 (26-30)	1	5	6
3 (31-35)	1	3	4
4 (36-40)	0	1	1
Total	11	34	45

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.”¹ 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.² 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.³ The many kinds of impaction include vertical, horizontal, buccal, lingual and even inverted impaction. The etiology of impaction is multifactorial.⁴ Impacted teeth may be associated with periodontal disease, dental caries, odontogenic cyst and tumors, pain of unexplained origin, jaw fracture, and resorption of the root of the adjacent tooth.⁵

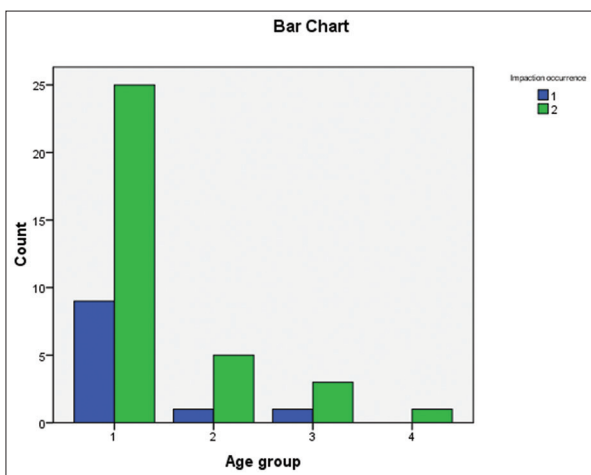
Table 2: Relation of gender to impaction occurrence.

Gender	Impaction occurrence		Total
	1 Maxilla	2 Mandible	
1 (Male)	9	26	35
2 (Female)	2	8	10
Total	11	34	45

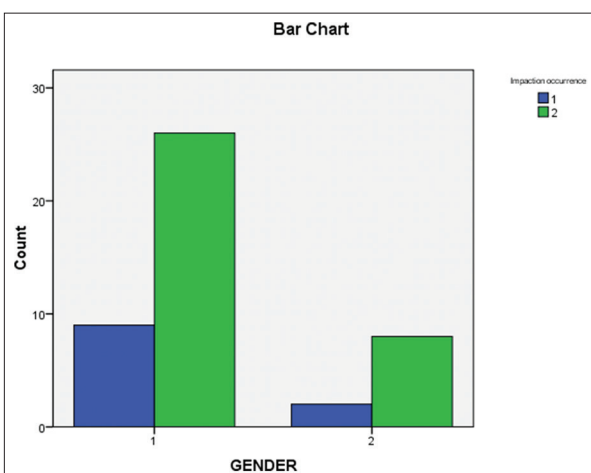
This retrospective study, to assess the prevalence of impacted third molars among Saudi population, included 3800 patients panoramic radiographs. To ensure diagnostic validity in this study, radiographic findings were verified with clinical records, which were collected on standard forms as part of routine examination process. A total of 45 (1.2%) patients had impacted third molars with a P value of 0.089 ($P = 0.089$) which is not statistically significant. Haider and Shalhoub⁶ conducted a similar study among Saudi population and reported a prevalence of 34% and 29% of impacted third molars for males and females respectively. Ioannis *et al.*,⁷ in their retrospective study for the Greek population reviewed 425 patients with impacted teeth and reported a prevalence rate of 0.001 ($P = 0.001$). Chu *et al.*⁸ conducted a retrospective study among Hong Kong Chinese population which included 7486 patients and reported 28.3% prevalence of impacted third molars. Tang⁴ reported a similar prevalence rate of 27.8% among Hong Kong population.

The male to female ratio with impacted third molars was 35:10 (3.5:1). Not many studies have been reported in the literature on the prevalence of impacted premolars.

Most of the cases of impacted premolars are reported accidentally on routine screening of patients or when the



Graph 1: Relation of age group to impaction occurrence.



Graph 2: Relation of gender to impaction occurrence.

patients report to the dental clinic with some other problem. Few of the impacted premolars are also advised for removal by the orthodontists before the start of fixed mechanotherapy.

There are various theories to explain the occurrence of impacted teeth. One among them is the discrepancy in the jaw size to the tooth size. Another theory substantiating the occurrence of impacted teeth is the change in dietary habits which does not adequately stimulate jaw growth and hence the occurrence of impaction.

Conclusion

1. The prevalence of impacted premolar teeth is more in the mandibular arch than in the maxillary arch
2. Females had a higher prevalence of impacted teeth than men
3. Age group 25-30 years had a high rate of prevalence of impacted premolars.

Acknowledgments

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