

Prevalence of peg lateral incisors in subjects having impacted / displaced canines

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Abstract

Introduction: Peg lateral or anomalous maxillary lateral incisors have been implicated with various anomalies and it is paramount to know these since it is important for diagnosing such anomalies pre-hand. Hence the purpose of the present study was to analyze the prevalence and relationship of peg lateral incisor with of maxillary canine impaction.

Material and Methods: The complete pretreatment records of 50 orthodontic patients were examined. Subjects with maxillary impacted canines were selected and size and shape of lateral incisors were measured and recorded. The significance of associations between canine impaction and dental and clinical features and anomalies were examined with the chi-square test.

Results: Thirty eight percent of subjects had peg and smaller sized maxillary lateral incisors with impacted / displaced canines.

Conclusions: There is a higher prevalence of (38 %) peg and smaller sized maxillary lateral incisors with impacted / displaced canines.

Keywords: Displaced maxillary canines; anomalous lateral incisors; microdontia

Introduction

The maxillary canine is the second most common tooth affected by impaction after the third molars, with a prevalence of 1%-3%.¹⁻³ The etiology of maxillary canine impaction is still under research. Although numerous possible factors have been implicated, it is certain that the buccally displaced canine (BDC) and the palatally displaced canine (PDC) are characterized by different etiopathogeneses.⁴

An association between maxillary lateral incisor anomalies and PDCs was demonstrated,⁵⁻⁸ moreover, an association with a smaller mesiodistal crown width and shorter roots of the maxillary lateral incisors has also been reported.⁷ Despite of these conclusions, a great number of studies suggest the 'genetic theory'⁹⁻¹² as responsible

for PDCs. Given the simultaneous occurrence of PDCs and congenital dental anomalies, these authors believed that a PDC was only one aspect of a general dental eruption disorder that could be genetic in origin.¹²⁻¹⁸ Numerous studies have highlighted the association between PDCs and microdontia, especially that of the maxillary lateral incisor.^{4,14,17}

The average mesio-distal width of maxillary lateral incisors is 6.5mm.¹³ Maxillary lateral incisor is usually about 2mm narrower mesio-distally and 2mm shorter cervico-incisally than that of the central incisor, although the root is usually as long, if not somewhat longer than that of the central incisor.

Maxillary lateral incisors vary in form more than any other tooth in the mouth except that of the third molars.⁷ If the variation is too great, it is considered a developmental anomaly. A common situation is to find maxillary lateral incisors with nondescript, pointed form and such teeth are called as peg-shaped laterals. When the mesio-distal width of lateral incisors is much smaller than the

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average width and it is not of typical pointed peg form, then it is called a small lateral incisor. They pose an esthetic problem just like peg laterals.

Few studies have been conducted to determine the association of DCs with congenital dental anomalies and peg lateral incisors. Therefore, the aims of this study included; evaluation of the prevalence and distribution of peg lateral incisors with impacted canines, to analyze the clinical and dental features of canine impaction, to evaluate the association of canine displacement with other dental congenital anomalies and to compare the data with other similar studies.

Material and Methods:

Pretreatment panoramic radiographs, history sheets and dental casts of 50 orthodontic patients, visiting Orthodontics Department of Khyber College of dentistry, between the chronological ages of 10 and 32 years with impacted / displaced maxillary canines were included in the study. Approval from ethical committee was taken before commencing the study. The impaction diagnosis and the impaction site were determined on the basis of clinical examinations and standardized radiographs (panoramic radiographs, intraoral occlusal radiographs). Patients with craniofacial syndromes associated with tooth aplasia or displacement, trauma, and chemotherapy were excluded. The Mesiodistal dimensions of Maxillary lateral incisors were measured with standardized digital vernier calipers. The statistical analysis was performed with SPSS version 16.0 software.

Results

Peg laterals have a significantly high frequency according to results of this study which is 38 percent (Table I) associated with canine displacement or impaction.

Table I: Distribution and frequency of peg lateral incisor in patients with maxillary canine impaction

Lateral incisor		Gender		Total(%)
		Male	Female	
	Normal lateral incisor	16	15	31(62)
	Peg Lateral incisor	10	9	19(38)
Total		26	24	50 (100)

Discussion

Maxillary lateral incisors are often missing, anomalous or small. Particular shapes that recur have been identified (e.g. peg and barrel) and systems have been established so that dental anthropologists can nominally categorize misshaped or anomalous teeth.^{8,9}

Table II: chi-square test for peg lateral incisor in patients having impacted canine

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.013	1	.908		
Continuity Correction	.000	1	1.000		
Likelihood Ratio	.013	1	.908		
Fisher's Exact Test				1.000	.569
N of Valid Cases	50				
Significant level < 0.05					

Dental anomalies can result from many factors both genetic and environmental. Although, defects in certain genes are the most blamed etiological reason in the prenatal period. Post natal periods have also been blamed for anomalies in tooth dimensions, position, and number.¹⁰ Peg shaped laterals are one of the dental anomalies that are likely to be connected to defects in certain genes. There is probably a strong component of heredity and peg shaped lateral incisors have been linked genetically with tooth agencies and impacted canines.^{11,12}

The prevalence rate of peg shaped maxillary lateral incisors in the general population associated with palatally displaced canines

ranges from slightly less than 1% to slightly more than 2% in one study.⁶ Peg-shaped maxillary lateral incisor is a common finding among developmental malformed teeth. It was reported by Clayton² as being present in 0.3 % of U.S subjects, while Thilander and Myrberg⁹ found 0.6% of the same anomaly in Swedish school children. Magnusson TE⁸ reported that, peg-shaped maxillary lateral incisor are more common in boys 1.3% then (3%) girls

Salama and Abdel-Megid¹¹ conducted a study on the prevalence of agenesis and peg-shaped maxillary lateral incisors with impacted canines in Saudi Arabian subjects. They found that peg shaped maxillary lateral incisors were present in 9% of the sample. Peg-shaped maxillary lateral incisor was found in 0.7 % of the total sample size in the Icelandic sample. The study conducted here in Khyber College Dentistry has revealed a remarkably high frequency of peg shaped and small sized lateral incisor associated with impacted / displaced canines.

The close association observed here between impacted canines and dental aplasia is supported by growing scientific evidence.^{1,3,4,12,14,17,18} This study confirmed the close link between DCs and lateral incisor shape and size. When a single type of tooth was considered, the association was not statistically significant. Maxillary lateral incisors showed a higher prevalence of shape and size changes. Very little material is available on internet and in other related orthodontic journals about the prevalence of undersized or small size lateral incisors and their association with impacted / displaced canines and very interestingly, it was noted in this study that the prevalence of small size lateral incisors and peg lateral incisor is much more frequently associated with impacted canines.

Conclusions

There is a higher prevalence of peg and smaller size maxillary lateral incisor with impacted / displaced canines (38%). Gender does not significantly contribute to variation in lateral incisor size and shape according to this study.

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