Original Article

Frequency of Maxillary Peg Lateral Incisors in a Sample of Pakistani School Children

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ABSTRACT

Objective: To determine the frequency of maxillary peg lateral incisors in a sample of Pakistani school children.

Methodology: The cross-sectional epidemiological survey was done in 2014. The study was approved by the ethical committee of the institution. The sample consisted of 550 patients, of which 347 were females and 203 were males with the age range of 7-16 years. Data was collected by clinical intraoral examination of children for peg lateral incisors. The frequency of maxillary peg lateral incisors was calculated by quadrant and gender. The applied mathematical analysis was implemented with SPSS version 20. Qualitative data like gender and side of dentition was presented in the form of frequency and percentages. Data was stratified for gender. Post-stratification chi-square test was applied with a p-value <0.05 as significant.

Results: The frequency of peg laterals in the sample was 1.8%. Females have higher incidence than males for peg laterals in maxillary arch (2% in females vs 1.4% in males). The incidence of bilateral peg laterals (1.1%) was higher in both female and male patients (66.7% and 33.3% respectively) than unilateral peg laterals (0.7%). Unilateral left sided peg was more common (0.5%). The significance level of gender and frequency of maxillary peg lateral incisor is 0.88, hence, insignificant.

Conclusion: Maxillary peg lateral is a less common dental anomaly. One-sided peg laterals are domineering on the left side and in females. Comparatively bilateral peg is more frequent than unilateral one and occurs more commonly in females than males.

Keywords: *Congenitally missing. Lateral Incisors. Orthodontics. Peg lateral incisors.*

INTRODUCTION

Dental anomalies that mostly affect youngsters are related to malocclusion. The determination of dental peculiarities constitutes one of the most imperative territories in pediatric dentistry.[1] Developmental anomalies of the dentition are frequently observed in patients attending orthodontic clinics. The dental anomalies include modifications in number, measurement, shape, shade and structure of teeth.[2]

The etiology might be inherited determinates; fundamental causes might be malnourishment, metabolic factors, radiation or trauma.[2] Dental anomalies alone are not fatal and hereditary, so they can be anticipated before their appearance in the fetus.[3]

Maxillary lateral incisors modify in shape more than any other tooth in the mouth aside from the third molars.[4] It is viewed as a formative abnormality. A typical circumstance is to discover maxillary lateral incisors with an unremarkable, pointed frame; such teeth are called peg-formed laterals.[5] It has been seen that 2-5% of the overall public roughly demonstrate pointed lateral maxillary incisors and females illustrate a higher incidence than males.[5,6]

The maxillary lateral incisor is 6.5mm wide mesiodistally. Maxillary lateral incisor is short by 2mm both mesiodistally and cervicogingivally in comparison to maxillary central incisor, though the root of lateral incisor is longer than central incisor. If the maxillary lateral incisor is too much narrow in mesiodistal width than the average width but not pointed in shape, then it is named as small lateral incisor rather than peg lateral.[6]

There is a strong relationship between tooth size abnormality and congenital absence of teeth as this provides a basis for genetic defects which affect all other teeth in all quadrants, if any tooth is found to be congenitally missing.[6] In each group of teeth, the distal tooth shows the most variability, it can be abnormal in size or can be congenitally missing.[7]

Family studies are necessary to reveal the mode of inheritance of some of these dental anomalies.[7] Early identification and diagnosis of dental anomalies are useful for planning comprehensive management for such conditions in young children.[8]

Most anomalies will present in childhood and yet may be misdiagnosed or left untreated because the case is perceived to be too difficult.[8] Dental anomaly in primary dentition is often associated with an increased risk of an anomaly in permanent dentition.[9]

Congenital absence of teeth can be due to ectodermal dysplasias like syphilis and rickets, heredity and evolutionary changes occurring in dentition with time, as we have lost our fourth molar due to evolution, in coming times humans will hardly have third molars and maxillary lateral incisors.[10,11]

In Pakistan, there has not been much previous research among pediatric patients to determine frequency of

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maxillary peg laterals. So, this cross-sectional survey of a sample of school children was conducted to provide some database on a national level.

METHODOLOGY

This was an observational cross-sectional epidemiological survey directed in 2014 to determine the frequency of maxillary peg lateral incisors in a sample of school children in the area of Raiwind, Lahore, Pakistan. Data was collected randomly by intraoral observation and examination of school children from grade 3-10 for peg laterals. A total of 550 children, of which 347 were females and 203 were males with age range 7-16 years were included in the study. Children of Angle class I, class II and class III malocclusions with mixed and permanent dentition were included in the sample. Children with craniofacial anomalies and cleft lip and palate were excluded. The frequency of maxillary peg laterals was measured by quadrant and gender.

STATISTICAL ANALYSIS

The statistical analysis was performed with Statistical Package for Social Sciences (SPSS) version 20. Qualitative data like gender and side of dentition was presented in the form of frequency and percentages. Data was stratified for gender. Post-stratification chi-square test was applied with p-value ≤ 0.05 as significant.

RESULTS

The frequency of peg laterals was found to be 1.8%. Females had a higher incidence than males for peg laterals in maxillary arch (2% in females: 1.4% in males). The incidence of bilateral peg laterals (1.1%) was higher in both female and male patients (66.7% and 33.3% respectively) than unilateral peg laterals (0.7%). Unilateral peg was more common on left side (0.5%). The significance level of gender and frequency of maxillary peg lateral was 0.88, hence, insignificant.

DISCUSSION

The maxillary lateral incisors are frequently absent, deformed or diminutive in size.[7] Specific shapes that are recurrent have been recognized (e.g. peg and barrel) and frameworks have been built up with the goal that dental anthropologists can identify distorted or atypical teeth.[8] Dental anomalies can come about because of many elements, both hereditary and environmental conditions.[9] Apart from the pre-birth period, post-natal period have additional influence on irregularities in tooth measurements, number and position.[10] Dental anomalies like maxillary peg laterals are probably associated with other anomalies.[11] There is most likely a solid segment of heredity and peg shaped maxillary laterals have been connected hereditarily with agenesis of teeth.[12]

The prevalence of maxillary peg laterals is roughly 2-5% in the overall population and the frequency is higher in females.[13-15] Peg laterals were discovered similarly in both left and right quadrants, unilateral or bilateral with no gender differences.[16] However, in this cross-sectional survey of a sample of school children, the frequency of maxillary peg lateral was found to be 1.8%.

In a study done by Pecket et al. in 1996, the incidence of maxillary peg laterals with the palatally dislocated canine in overall population ranges from somewhat under 1% to marginally over 2%.[16]

In a report presented by Basdra et al., the peg shaped abnormalities of maxillary laterals were found to be 0.9% in the patients of class II division 1 malocclusion and 3% in the patients of class III malocclusion.[17] He analyzed the relation of hereditary dental anomalies to

Table 1: Frequency Distribution of Maxillary Peg Laterals

Sample Size (n=550)	Frequency	Percentage
Absent	540	98.2
Present	10	1.8
Total	550	100.0

Table 2: Stratification of the Frequency of Peg Laterals with respect to Gender

Gender	Quadrant				Total	p-value
	Unilateral Right Side	Unilateral Left Side	Bilateral	Absent		
Female	1 0.3%	2 0.6%	4 1.2%	340 98.0%	347 100.0%	0.888
Male	0 0.0%	1 0.5%	2 1.0%	200 98.5%	203 100.0%	
Total	1 0.2%	3 0.5%	6 1.1%	540 98.2%	550 100.0%	

p-value = 0.888 is statistically insignificant and shows no gender difference.

class II division 2 malocclusion and identified it a reason associated with hypodontia, affected canines, transpositions and distorted laterals.[17,18] In another study, the patients of Angle class 1 malocclusion presented with a higher incidence of peg shaped maxillary laterals ($p>0.05$).[19]

The peg laterals may be generally connected with other dental anomalies e.g. tooth agenesis, transposition of maxillary first premolar and canine, buccally dislodged canine, palatal displacement of maxillary canines bilaterally and transposition of mandibular lateral incisor and canine for cases for concomitant dental anomalies.[4,7,13,15,18,19]

The prevalence of peg laterals was 1.8% in the present research. The result showed similarity with previous studies on peg laterals. The ratio of female to male was found to be 2:1.4 in this contemplate. In an alternate contemplate no significant gender differences were found in the frequency, in spite of the fact that females were greater in number in that sample.[19]

In this study, 1.1% of patients presented with bilateral peg laterals. Also 0.5% presented with pegs just on left side. It was also noted in other studies that unilateral pegs are mainly present on the left side of the maxilla.[18,19] The field studies done by Ucheonye et al. in 2010 demonstrated a higher incidence of right-sided maxillary pegs i.e. 75% as compared to equal demonstration of bilateral and unilateral maxillary pegs (33.3% each) in clinical samples.[8]

The pattern of associations among seven types of dental anomalies was studied by Baccetti in untreated orthodontically compromised subjects i.e. aplasia of the second premolar, small sized maxillary lateral incisors, infraocclusion of primary molars, enamel hypoplasia, ectopic eruption of first molars, supernumerary teeth, small maxillary lateral incisors and palatal displacement of maxillary canines. A strong association was present between small-sized maxillary laterals and infraoccluded primary molars with all other examined types except supernumerary teeth.[20,21]

Further studies regarding the genetic susceptibility of peg laterals and other dental anomalies in other teeth should be carried out to know the frequency of other dental anomalies and the likelihood of developing these dental anomalies based on genetic makeup in Pakistani children and to investigate the maximum limit of Bolton discrepancy in such cases.

CONCLUSION

Maxillary peg lateral is a less common dental anomaly. In this research, bilateral pegs were more frequent as compared to unilateral pegs. Both occurred more commonly in females than males. Unilateral peg laterals were dominating on left side. These dental anomalies play a vital role in alignment and occlusion of teeth and affect the orthodontic treatment plan. They teeth should be considered carefully to avoid treatment relapse. More studies on national level are encouraged to set up a database for Pakistan.

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