THE FREQUENCY OF PEG-SHAPED MAXILLARY
PERMANENT LATERAL INCISORS AMONG
ORTHODONTIC PATIENTS OF TWO HEALTH DISTRICTS
OF PUNJAB, PAKISTAN

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ABSTRACT

Objective: To determine the frequency of peg-shaped maxillary lateral incisors among orthodontic patients of two health districts of Punjab, Pakistan.

Materials And Methods: This cross-sectional study was conceived at Faisalabad Medical University and de Montmorency College of Dentistry, Pakistan. Duration of study was from December 2016 to October 2017. Non-probability consecutive sampling technique was used. Three hundred untreated patients were included as per selection criteria. Patients with cleft lip and palate or having any craniofacial malformations were excluded. Method of clinical examination was used to find the presence of peg maxillary laterals by measuring its mesiodistal dimension with standardised digital vernier callipers, and panoramic radiographs were used to confirm the presence and size of maxillary lateral incisors.

Results: Six percent (N=18) subjects were found to be having peg-shaped maxillary lateral incisors out of 300 selected patients. Among the patients with peg laterals, unilateral-type was more common as compared to the bilateral one. Peg laterals were more common in females as compared to males.

Conclusion: Frequency of peg-shaped maxillary lateral incisors was found to be 6% among orthodontic patients of two health districts of Punjab, Pakistan.

Keywords: Maxillary lateral incisors; Peg Laterals; Frequency.

INTRODUCTION

The term “peg lateral” usually refers to a dental anomaly in which upper lateral incisors are abnormally small in mesiodistal dimensions and are more ‘pointed’ compared to their usual more rectangular appearance.¹ The average mesio-distal dimension of maxillary lateral incisor is 6.5 millimetres, which is about 2 millimetres narrower mesio-distally and 2 millimetres shorter cervical-incisally than the central incisor.²³ There are various theories regarding aetiology of peg-shaped maxillary lateral incisors (PL), but there is no consensus in the literature about the exact aetiology. There is a strong association of genetic factors in the occurrence of PL.⁴⁵ Granat, and Chapelle⁶ proposed that with evolution, teeth dimensions got reduced and became more conic. Brook⁷ also proposed a multifactorial theory regarding aetiology of peg-shaped maxillary lateral incisors and found a general trend that more severe the hypodontia, the smaller the size of the teeth formed.⁸

The prevalence of PLs is not constant and varies population to population due to genetic influences. Prevalence rates of PLs have been reported to a range from 0.6% to 9.9%⁴⁹¹⁰ in various populations.
Altug-Atac and Erdem studied 3043 orthodontic patients and found that 48 patients had PLs. In a study by Kazanci et al. found the prevalence of PLs 2.12%. Thus the prevalence of PLs in different populations has been reported, but there are very few studies regarding frequency of peg-shaped maxillary lateral incisors in Pakistani population.

Andrews in 1972 proposed six keys for achieving ideal occlusion: Correct molar relationship, correct tip and tipping, lack of rotations, tight contact points, and optimal occlusal plane. Bennett and McLaughlin later added the 7th key of correct tooth size mass. Any mismatch in tooth mass ratios will results in failure to achieve Andrew’s six keys of occlusion, thus failing to achieve normal overjet, overbite, levelling, alignment and occlusion at the completion of orthodontic therapy. Similarly, anomalies in maxillary lateral size can cause various orthodontic, aesthetic and functional implications. If untreated, PLs can lead to disturbances in arch length, disturbances in anterior guided occlusion and can also cause psychological problems.

The objective of current study was to investigate the frequency of peg-shaped maxillary lateral incisors along orthodontic patients of two health districts of Punjab, Pakistan.

MATERIAL AND METHODS

The present study was conducted from December 2016 to October 2017 after institutional approval at the Department of Orthodontics, de’Montmorency College of Dentistry, and Faisalabad Medical University. Method of clinical examination was used to find the presence of peg maxillary laterals by measuring its mesiodistal dimension with standardised digital vernier callipers, and panoramic radiographs were used to confirm the presence and size of maxillary lateral incisors. Peg-shaped maxillary lateral incisors were evaluated as conical shape crown or the mesiodistal width less than the cervical width.

Inclusion criteria were fully erupted permanent dentition except for wisdom, the absence of any craniofacial syndromes, the absence of cleft lip and palate while exclusion criteria were history of orofacial trauma, previous orthodontic or restorative treatment, the absence of any dental pathos while patients with cleft lip and palate or having any craniofacial malformations. The mean age, gender distribution was calculated. The frequency of PLs among the selected sample was calculated in the form of percentages. The data were analysed in SPSS 21.0.

RESULTS

Twenty radiographs were randomly selected to evaluate and assess the accuracy of a single evaluator. The measurements were then repeated 14 days later and found out to be reliable. Data was found to be having good reliability and repeatability.

The mean age of the patients was 19.21±4.81 years, with a minimum age of 14 and maximum of 25 years. In a sample of selected 300 patients, the frequency of PLs was found out to be 6% (N 9), the frequency of PLs was found to be more common in females and unilateral type being more common. (Table 1 & 2).

Table-1: Gender Distribution (N 18)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peg lateral Patients</td>
<td>6%</td>
</tr>
<tr>
<td>Males having Peg lateral</td>
<td>25%</td>
</tr>
<tr>
<td>Females having Peg lateral</td>
<td>75%</td>
</tr>
</tbody>
</table>

Table-2: Unilateral Vs bilateral peg laterals. (N 18)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peg lateral Patients</td>
<td>6%</td>
</tr>
<tr>
<td>Unilateral type</td>
<td>75%</td>
</tr>
<tr>
<td>Bilateral type</td>
<td>25%</td>
</tr>
</tbody>
</table>

DISCUSSION

The objective of the current study was to investigate the frequency of peg-shaped maxillary lateral incisors in an orthodontic population, visiting Faisalabad medical university and de’Montmorency college of dentistry, Pakistan. The current study revealed a frequency of peg-shaped lateral incisor to be 6%. The prevalence rates are comparable to other studies by Afzal et al., Amin et al., Al-Humayani., and to the rates for black (1.5%) and white (1.3%) people.

The frequency rates were higher than as reported by Clayton(0.3%) in U.S population, by Thilander and Myrberg(0.6%) in Swedish school children, 0.7% of Icelandic population, but lower than as reported by Salama and Abdel-Megid (9%) in Saudi Arabia, and by Celikoglu(20.2%) in a Turkish population. The results are near similar to the one reported by Baccetti(4.7%). These differences may also be attributed to genetic differences and sample size variations.
The current study showed that peg laterals were more common in females as compared to males. This is similar to the results of two meta-analyses, where the conclusion was that women are 1.35-1.37 times more likely on risk than men to have peg-laterals.24,25 Present study showed that unilateral peg was more common as compared to bilateral one. Our results are not by the results of studies showing that bilateral peg-shaped teeth are more common,11,26 but in agreement to the studies where unilateral peg-laterals were more common than bilateral ones.27,28

There are various methods of calculating mesiodistal width of teeth: eyeballing, quick check of the laterals, CBCT, digital 3D methods, dividers and ruler (nearest to 0.5mm) and vernier callipers (nearest 0.1mm).29 We adopted the method of vernier callipers in present study which in accordance with literature is the most accurate and reproducible method.30

In this study our aim was to find the frequency of peg laterals in Pakistani population, in upcoming studies, we will focus on finding an association of peg laterals with other dental anomalies in Pakistani population with larger sample size and longer study duration.

CONCLUSION:

Frequency of peg-shaped maxillary lateral incisors was found to be 6% among orthodontic patients of two health districts of Punjab, Pakistan.

REFERENCES


