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Short Communication

Frequency of Peg Shaped Lateral Incisors in School-Going, Non-Syndromic Pediatric Population of Rawalpindi

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ABSTRACT

Objective: To determine the frequency of peg-shaped lateral incisors in school-going, non-syndromic children of Rawalpindi.
Study Design: Cross-sectional study.
Place and Duration of Study: Operative Dentistry Department, Armed Forces Institute of Dentistry Rawalpindi, Pakistan from Dec 2019 Jan 2020.
Methodology: Three hundred and forty patients with age ranging from 6 to 11 years were taken from different schools of Rawalpindi. Oral-examination was performed by disposable-mirrors, torch and spatulas which included looking for the presence of peg-shaped permanent maxillary lateral incisors.
Results: Out of 340 children, 69% males and 31% females had peg laterals. In relation to age and school distribution, no statistically significant difference was seen between them (p=0.3, p=1.0). Quadrant-wise comparison revealed decreased incidence of single (6%) and increased bilateral peg-laterals in males (6% and 2% respectively) as compared to females.
Conclusion: The frequency of peg-laterals in children of Rawalpindi was 8.5% with greater occurrence in males.

Keywords: Incisors, Microdontia, Tooth Agenesis.

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INTRODUCTION

Basic functioning of dentition includes grasping and grinding of food, speech-articulation, facial-appearance and esthetics.[1,2] Brook et al. concluded that during dental-development, any discrepancy between molecular and cellular components can present as different dental anomalies, manifesting in the form of various alterations secondary to genetic and epigenetic-effects such as microdontia, hypodontia, macrodontia etc.[2,3] The maxillary permanent-lateral-incisor is most commonly affected by microdontia, with a prevalence rate of about 1.8%.[4]

These teeth are also known as peg-lateral, defined as an undersized and tapered-tooth which may also coexist with conditions like over-retained deciduous-teeth or canine disposition.[5] It is observed that average mesio-distal dimensions of the maxillary lateral incisor is 6.5mm, which is 2mm smaller mesio-distally, and 2mm diminished cervical-incisally as compared to the central incisor.[6,7] Peg-laterals can be observed in one or both quadrants in the maxillary arch. There is a genetic-predisposition, predilection to specific genders and races, and some unknown etiological-factors.[8,9,10] Presence of such teeth causes esthetic issues including localized or generalized spacing, unseemly appearance of teeth and deep bite which may sabotage the patient's confidence.[8,10]

There is limited local data regarding the prevalence of peg-laterals. Therefore, this study was carried out to determine and report the prevalence of peg-shaped lateral-incisors in school-going population of Rawalpindi, Pakistan. It also highlights the relationship between the anomaly, gender, age and its quadrant-distribution.

METHODOLOGY

This cross-sectional study was conducted by the Operative Dentistry Department, Armed Forces Institute of Dentistry Rawalpindi, Pakistan, after taking approval from the Institutional Ethical Review Committee (Ref no.905/Trg-ABP1K2) from December 2019 to January 2020.

Inclusion Criteria: Patients of either gender, with age range between 12-18 years, having permanent dentition, and being Pakistani citizens were included.

Exclusion Criteria: Patients having undergone an orthodontic treatment or restorative procedure for maxillary permanent lateral incisor, having signs and symptoms of any congenital facial deformity, history of an extraction of a permanent tooth, and history of any trauma to the anterior maxilla were excluded.

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Sample size was calculated with Open Epi sample size calculator. Subjects fulfilling the inclusion criteria were invited to take part in the study. Using non-probability convenience sampling, 340 students, aged 6 to 11 years, from both government and private primary schools of Rawalpindi were recruited with all ethical protocols being strictly followed. The purpose, procedures, and benefits of the study were explained to them and a written informed consent was taken. Oral examination of the participants was performed by disposable mirrors, torch and spatulas. The clinical examination included visual inspection under adequate light looking for the presence of peg shaped permanent maxillary lateral incisors.

Participant's information was recorded on the specially formulated form having the demographics of the patient along with the columns for evaluation of number and quadrants of affected teeth. Data was analyzed using Statistical Package for Social Sciences (SPSS) version 19. Quantitative data was expressed as frequency and percentages and comparisons were done using Chi square test, with a *p*-value ≤0.05 being statistically significant.

RESULTS

A total of 340 children were evaluated, out of which 240 were male, and 100 were female. Equal number of children (170) were selected from both government and private schools. Twenty-nine children, including 20(69%) males and 9(31%) females had peg laterals. In relation to age and school distribution, similar prevalence was seen across groups, with no statistically significant difference (*p*=0.3 and 1.0 respectively), which can be seen in Table-I.

Table-I: Demographic data of Respondents (n=340)

Variables		n (%)	n (%)	*p*-value
Peg lateral incisor		Not Present 311(91.4)	Present 29(8.6)	
Gender	Male	220(71)	20(69)	0.8
	Female	91(29)	9(31)	
Age (years)	6 – 10	181(58)	20(69)	0.3
	11 – 17	130(42)	9(31)	
School Distribution	Government	156(50)	14(48)	1.0
	Private	155(50)	15(52)	

Quadrant-wise comparison revealed decreased incidence of single peg laterals in males (6%) as compared to females (8%). Whereas males exhibited greater occurrence of such bilateral anomalies (2%) showing no statistically significant difference (*p*>0.5, Table-II).

Table-II: Number of Peg Lateral Teeth in Children according to Gender and School Distribution (n=340)

Variables		Number of Peg Lateral Teeth			*p*-value
		Nil n (%)	Single n(%)	Double n(%)	
Gender	Male (n=240)	220(92)	14(6)	6(2)	0.6
	Female (n=100)	91(91)	8(8)	1(1)	
School Distribution	Government (n=170)	156(92)	9(5)	5(3)	0.4
	Private (n=170)	155(91)	13(7.5)	2(1.5)	

DISCUSSION

The occurrence of small, missing or deformed lateral incisors are mostly linked with genetic predisposition.[11,12] Studies for determining prevalence of genetic disorders of teeth are helpful in finding the etiological factors, including ethnicity, since their manifestation is different in various races having highest prevalence in Asian people.[12] The concept of local environmental components playing important role in giving rise to microdonts is favored by many researchers. American population presents with increased prevalence of peg laterals as compared to Europeans and Australians, proposing the fact that geological location plays a pivotal role in occurrence of these anomalies.[12]

According to a multi population study done in Saudia Arabia, the prevalence of peg laterals is higher in males as compared to females in Middle Eastern and Asian populations with the exception of Pakistanis and Phillipinos.[10] Similarly in a study conducted by Malaysian researchers, difference of distribution between males (3.2%) and females(2.7%) was very small.[7] A study done in Lahore district in Pakistan in 2011 revealed 1.3% presence of peg laterals with an slight increase in men (3.04%) as compared to females (2.06%).[11] Likewise, our study shows 8.5% occurrence of peg laterals with an increased distribution in males (69%) as compared to females (31%). Private school-going children showed a slightly higher prevalence of peg laterals in our study (52%).

Fang *et al*., found peg laterals to be twice as common on left side as compared to the right side, with almost same unilateral and bilateral presentation, while another study demonstrated increased

prevalence of unilateral (56%) and left-sided (57%) peg laterals in contrast to bilateral (44%) and right-sided (43%) peg laterals.[7,10] Correspondingly, our study revealed relatively higher occurrence of unilateral as compared to bilateral peg laterals.

CONCLUSION

The prevalence of peg laterals in children of Rawalpindi is 8.5% with a higher occurrence in males unilaterally.

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Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

NJB & FA: Conception, study design, drafting the manuscript, approval of the final version to be published.

MJAR & MAR: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

MA & MW: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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