

# The Prevalence of Apertognathia in Pakistani Children during Deciduous Dentition

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## ABSTRACT

**Aim:** To determine the prevalence of an apertognathia in Pakistani children during deciduous dentition stage in order to access the need for orthodontic therapy.

**Methods:** A Descriptive Cross Sectional study at Orthodontics clinic of de'Montmorency College of dentistry, Lahore, from 1.1.2016 to 31.4.2017. A group of 100 children aged between 3 to 6 years with apertognathia were included. Interincisal measurements, while clinical examination was taken to access apertognathia. The prevalence of apertognathia and its distribution with respect to gender was determined.

**Results:** The prevalence of apertognathia was found to be 15% with boys to girl ratio of 1:3.

**Conclusion:** It was concluded that girls are more affected by apertognathia than the boys in deciduous dentition. The high prevalence of apertognathia i.e. 15% in deciduous dentition suggests that there is requirement of paying attention on preventive aspect of orthodontic care.

**Keywords:** Apertognathia, Open bite, Deciduous.

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## INTRODUCTION

Regarding public dental health, it is key to determine epidemiological data on all types of malocclusion, in order to find out the population's orthodontic treatment needs, the budget required and preventive steps. Apertognathia is defined as lack of overlapping in vertical plane between upper and lower anterior teeth while maximum intercuspation.<sup>1</sup> It is caused by multiple etiological factors; including digit thumb sucking, tongue habits, temporomandibular joint issue, and amelogenesis imperfecta.<sup>2,3</sup> Association between cervical vertebrae morphology issues and anterior open bite is well established.<sup>4</sup> Combining traditional modalities to manage this open bite syndrome have been proposed.<sup>5</sup> Various modalities for prevention and correction of open bite proposed in literature are bite turbos on molars, protraction head gear, NITI arch wires and vertical elastics, multi loop therapy, and at present the use of bony anchored screws and miniplates<sup>6-10</sup>.

Anterior open bite (AOB) is another name of apertognathia.<sup>11</sup> It can be classified as dental or skeletal, anterior or posterior and unilateral or bilateral. It may also be typed as simple or complex.<sup>12</sup> The implications of open bite malocclusion include esthetics, disturbance of functions like speech and mastication and difficulty in biting/slicing from incisors<sup>13,14</sup>. Grades of AOB as per severity are:

Moderate AOB (0-2 mm), Severe AOB (3-4 mm) and Extreme AOB having open bite >4 mm<sup>15</sup>.

This malocclusion is difficult to manage and requires long term permanent retention. Many relapses occur after orthodontic care or after Orthognathic-jaw surgery. The frequency of Apertognathia in primary dentition ranges from 3% to 41% and varies between different population groups and by chronological age and gender.<sup>16</sup> As frequency of AOB in different populations varies; this research was designed to calculate the frequency of apertognathia in deciduous dentition of Pakistani population.

## METHODOLOGY

This research was conceived at the Orthodontic Clinical department, de'Montmorency College of Dentistry, Lahore in which orthodontic records of one hundred subjects, between 3 and 6 years of age and irrespective of gender, were included to determine the prevalence of apertognathia. Research duration was 1.1.2016 to 1.5.2017. The measurement of AOB was taken by calculating vertical distance between incisal tips at rest position of mandible, with vernier callipers while doing clinical examination on dental chair. The data analysis was done utilising SPSS ver 21. The Exclusion criteria were:

- Patients with no past history of undergoing orthodontic fixed appliance treatment
- History of dentofacial trauma
- Orofacial syndromes.

## RESULTS

The mean age of sample was 5 years. Out of total sample of hundred, 15 (15%) had apertognathia. Out

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of 15, 6(40%) were boys while 9 (60%) were fgirls. 70 % had moderateapertognathia of <1mm and 30% had >1mm apertognathia. The boy to girl ratio was found out to be 1:3(Table1).

Table 1: Frequency of AOB/Apertognathia in Deciduous Dentition (N=One hundred)

Parameter	Frequency
Apertognathia overall	15 (15 %)
Boys with AOB	6 (40 %)
Girls with AOB	9 (60 %)
Mild Apertognathia of less than 1mm	70%
Greater than 1mm Apertognathia	30%

## DISCUSSION

No research has been reported so far in our Pakistani population regarding frequency of apertognathia in primary dentition patients. The prevalence of apertognathia in this research on primary dentition was found to be 15%. The results of this research revealed that <1mm of open bite was more prevalent than >1mm of Apertognathia and more common in girls with boys to girls ratio of 1:3. This is close to the Belgian ratio of 2:3 and of Ahmed et al.<sup>17</sup> 1:3 but not in agreement with conclusion findings of certain studies<sup>18</sup>.

Although certain international studies exists on same topic but findings are difficult to compare and contrast with findings of present Pakistani research; in part, because of different materials and methods, age groups, interinvestigator variation, and the unmatched sample sizes. In the Pakistani population, the frequency of AOB in primary dentition is similar to study by Urzal et al<sup>19</sup> in Portuguese children but smaller when compared with the study by Ravn,<sup>20</sup> who found 34.2% in children aged three years old, while Tschill et al. found 37.4% in children between four and six years old<sup>21</sup>.

Early treatment should take into account the severity of the malocclusion and also its impact on the neuromuscular system by preventing asymmetries in the development of the alveolar bone and further disturbances in the permanent dentition, as well as inhibiting the progression and severity of the malocclusion.

## CONCLUSION

Apertognathia is more common among girls in deciduous stage. The high prevalence of apertognathia i.e., 15% in deciduous dentition demand paying of attention on preventive branch of orthodontics.

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