

Prevalence of Primary Molar Ankylosis and Relationship to Demographic Factors

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Introduction

Ankylosis is known as fusion of cementum with the alveolar bone. Exact etiology is yet unknown. Clinically, Ankylosis is characterized by metallic sound upon percussion, infraocclusion and lack of mobility. It can be also visible in the radiograph as loss of periodontal ligament space and a step in the occlusal plane. When the deciduous molar is ankylosed, lack of vertical growth of alveolar bone around the deciduous molar and continuous growth of alveolar bone around adjacent teeth creates discrepancy in height of occlusal table (3). In addition, ankylosis can cause tipping of the adjacent teeth toward the ankylosed tooth. This can cause delayed eruption and impaction of permanent successor. The tipping can complicate future orthodontic treatment (3) and planned deciduous molar extraction. Furthermore, ankylosis can cause dental asymmetry, loss of arch space and midline deviation. (3).

Purpose

Recent study conducted at the University of Nevada, Las Vegas have evaluated the prevalence of ankylosis of primary molar in this population. The purpose of this study is to determine the prevalence and its relationship with gender, ethnicity and crowding. Also, find out which deciduous molar shows the highest prevalence of ankylosis in this population.

Methods

The authors searched the electronic database (Axium) for subjects from Jan 2014- Dec 2022. Different data were collected after reviewing individual charts including gender, ethnicity, location of ankylosis, missing premolars, crowding and spacing. The Chi-square test was used to evaluate the significant relationship of ankylosis of primary molars to crowding, gender and ethnicity. Percentage for each ankylosed primary molar was calculated to determine which primary molar is more commonly ankylosed.

Results

Retrospective data analysis revealed that the overall prevalence of ankylosis was found to be 10%. No significant differences between sex and prevalence of ankylosis observed when two different sex were compared (P= .512) No significant differences between different ethnicities and prevalence of ankylosis were observed (P= .300) There was significant relationship between crowding and ankylosis (P=.046) Tooth #B had highest frequency of ankylosis in maxillary arch whereas tooth #L had the highest frequency of ankylosis in the mandibular arch.

Discussion

The prevalence of ankylosis in this study was found to be 9.8% which is higher than most studies that reported an overall 6.6% incidence of ankylosis among Caucasian patients (2). The differences in prevalence among this study and others are possibly related ethnic and selection criteria of the studied population. In the present study the prevalence of ankylosis in the different sexes was similar at 10% and 9.96% for males and females respectively. This study found no statistical difference in ankylosis among the different ethnic groups.

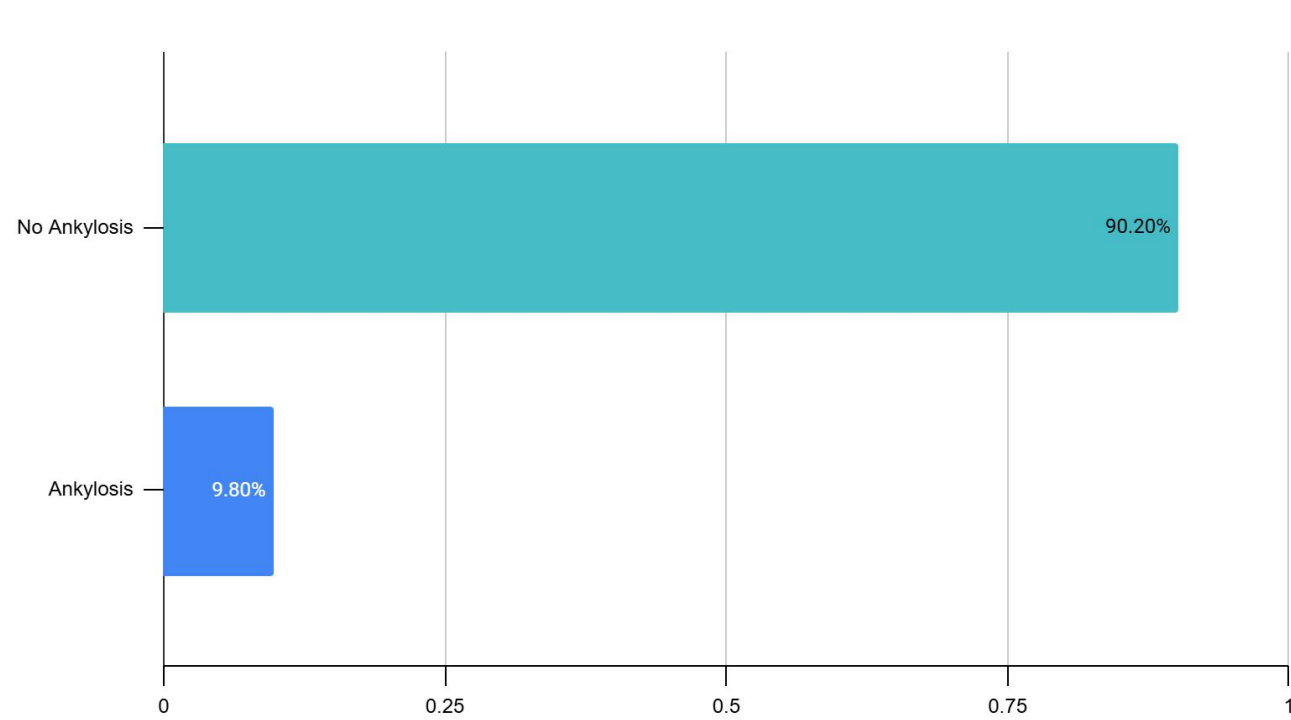
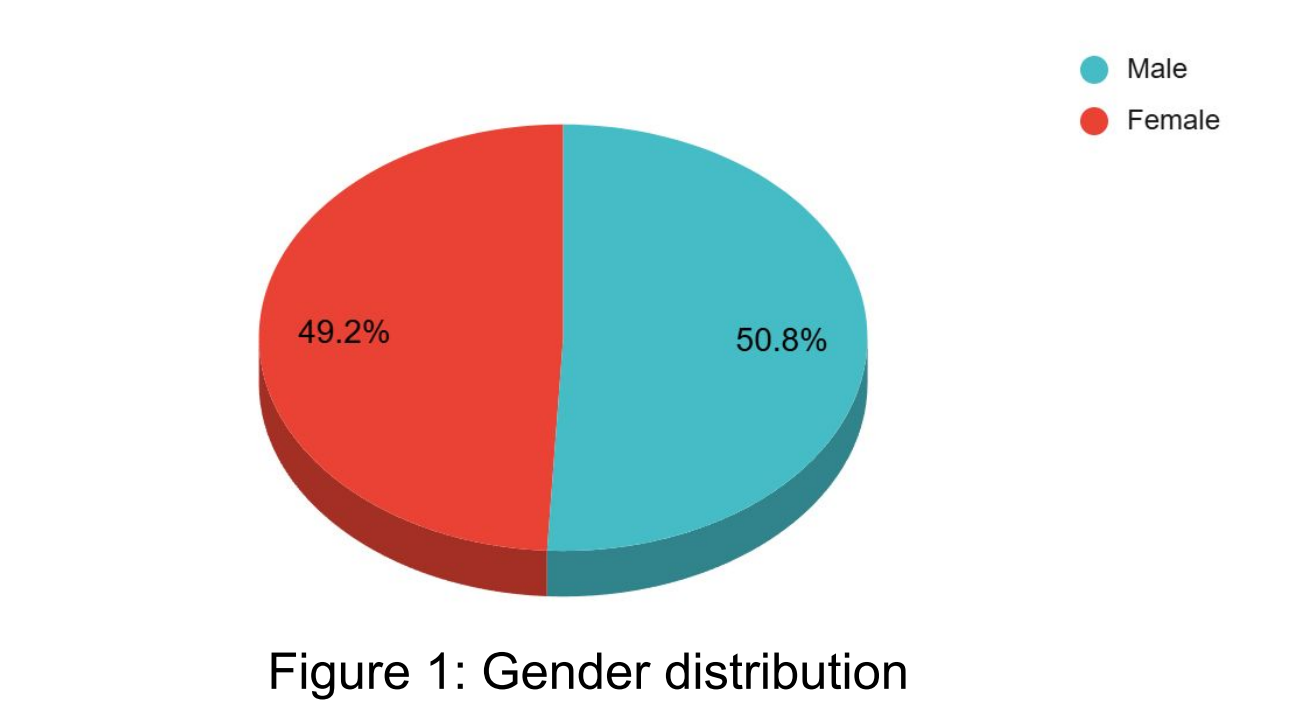


Figure 2: Prevalence of deciduous molar ankylosis

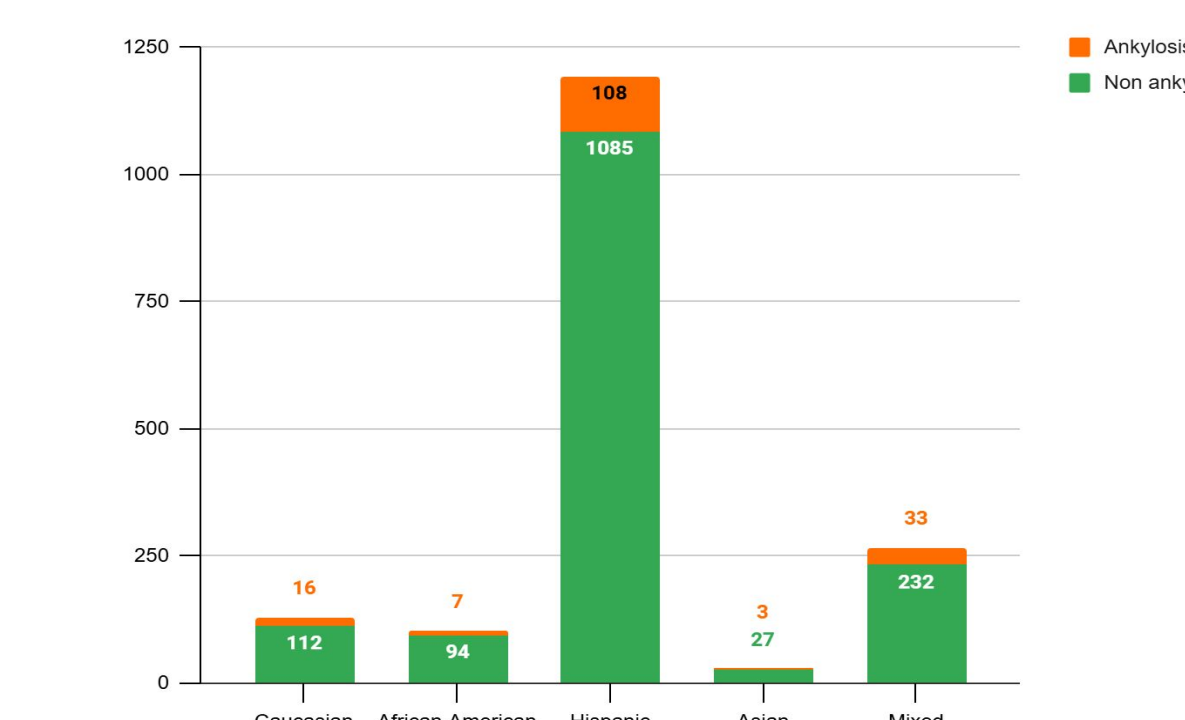
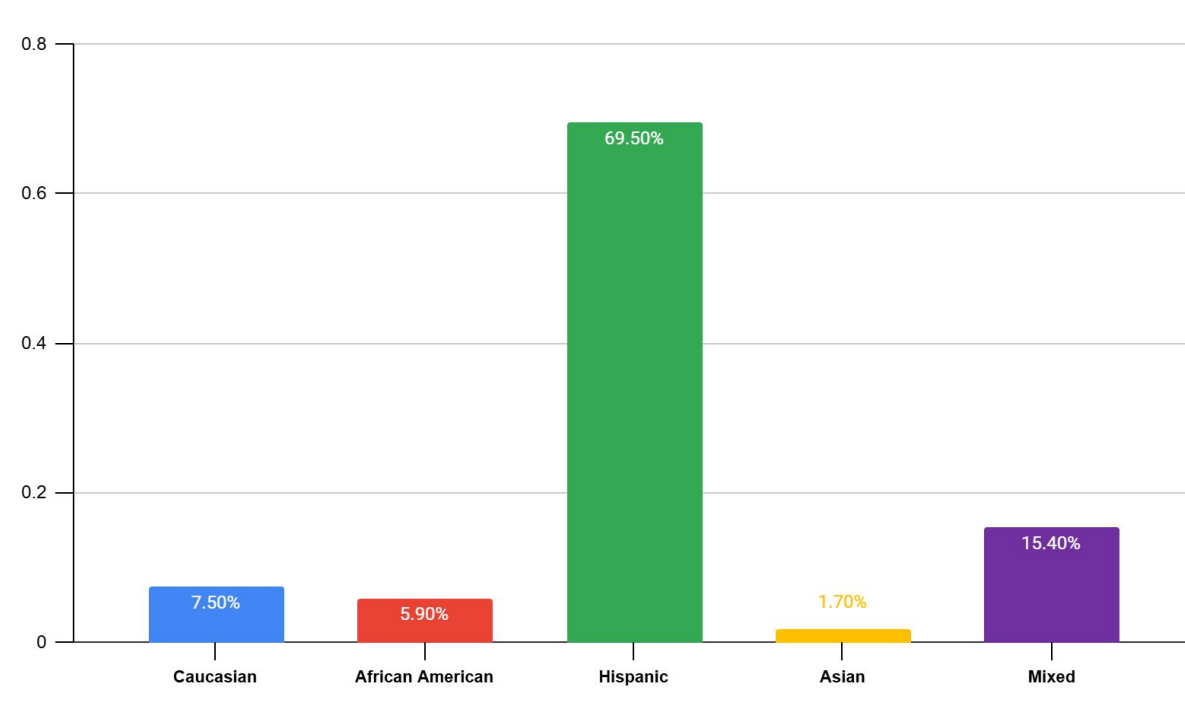


Figure 4: ankylosis cases within each ethnicity

However, Meuller et al found a correlation between race and deciduous molar ankylosis in children with a higher prevalence of ankylosis in caucasians who represented 78.3% of their study population and only 8.9% of Hispanics. Mandibular primary first molars (#L and S) had 28.3% and 19.3% respectively similar to Esian et al. who concluded that the mandibular molars most affected by ankylosis were the mandibular first molars (1). However, the maxillary right first deciduous molar (#B) had a prevalence of 19.9% which is the second highest frequency in the study. This discrepancy can be due to different diagnosis method or from heterogeneity from 4 different data collectors. In this study an incidental finding included the relationship of crowding and ankylosis of primary molars. There was a significant difference in the occurrence of ankylosis in children with crowding vs patients with spacing or no tooth- arch length discrepancy However, no conclusions can be made from this result due to lack of any evidence or additional studies that investigated the relationship between dental crowding and ankylosis. As a result, further investigating the possible correlation between crowding and ankylosis of primary molars is highly recommended.

Conclusion

From this study, only crowding was significantly associated with ankylosis of primary molar. There was no significant relationship between gender, ethnicity and ankylosis of primary molar. Primary molar ankylosis was more common in the mandibular arch. However, more study is needed to evaluate the relationship between primary molar ankylosis and demographic factors.

References

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